

A
DISSERTATION
UPON
T E A,

EXPLAINING ITS
NATURE and PROPERTIES

By many New EXPERIMENTS;

And demonstrating

From Philosophical Principles, the various EFFECTS
it has on different CONSTITUTIONS.

To which is added the

NATURAL HISTORY of TEA;

AND A

Detection of the several Frauds used in preparing it.

ALSO A

DISCOURSE

ON THE

VIRTUES of SAGE and WATER,

AND AN

ENQUIRY into the REASONS *Why the same Food is not equally
agreeable to all Constitutions.*

IN A

LETTER to the RIGHT HONOURABLE MARY Lady MALTON.

By THOMAS SHORT, M. D.

*Venus her Myrtle, Phœbus has his Bays,
Tea Both excells which we vouchsafe to praise.*

WALLER.

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TO THE
RIGHT HONOURABLE
THOMAS Lord *MALTON*,
KNIGHT of the BATH, &c.

MY LORD,



F an Endeavour to prevent or alleviate some of the various Pains and Diseases of Life stands in need of any Protection, 'tis not possible to find a more proper Patron than your Lordship: since you never fail to countenance and encourage such Attempts as are directed to publick Benefit, and appear in any Degree conducive thereto. That Humanity and Zeal for the Good of Mankind, which so remarkably possess your Lordship's Breast, will be sure to engage your favourable Approbation of every such Design. However trivial therefore, or inconsiderable the Subject of these Papers may seem to others, I am confident your Lordship will view it in another Light; if I can but convince you of its Tendency to Health, and the good Effects, which a due Attention to it may produce in different Constitutions.

Should any of my Readers think me unhappy in the Choice of my Subject, I am certain they will all conclude me happy in the Choice of a Patron: For however the Publick may differ, or dispute, concerning the

D E D I C A T I O N.

the Virtues of a certain Herb; there is no Dispute, no Controversy, MY LORD, concerning Yours. And should I particularly expatiate upon them, I should be perfectly secure from every Censure, but that of your Lordship's: Or if any Objection should be started, it would be only this, That 'tis needless to publish those Praises, in a Dedication, which are universally proclaimed. And what Wonder, MY LORD, if that generous benevolent Temper, so conspicuous in your Lordship upon all Occasions, should render you the Delight of every Eye, and the Darling of your Country?

Permit me further to observe, that whoever has the Honour to attend your Lordship as a Physician, has this peculiar Felicity; that whatever Pain or Sickness may befall you, should his Medicines, at any Time, prove ineffectual for your Relief, they would never fail to be seconded and assisted by the united Prayers and good Wishes of all that know You. So that I may justly apply to your Lordship that beautiful Expression of Horace, with the Alteration of one Word,

—— Hominumque prodis
Publica Cura.

It is no easy Matter, MY LORD, to check ones Thoughts, or restrain their Pen on so agreeable a Subject; but I am obliged rather to consider with what Patience your Lordship will read, than with what Pleasure I could write upon it.

Let me intreat your Lordship, not to place what I have said intirely to the Account of Gratitude; for though I am infinitely indebted to your Lordship, and gladly take this first Opportunity to acknowledge it in Publick, yet my Obligations have been so far from making me say more, that they have guarded me from saying so much as I should otherwise have done, to avoid the Suspicion of the fashionable Flattery, so displeasing to your Lordship's Ear, which had I not been very tender of, instead of a short Dedication, you had been disturbed with a long Panegyrick from,

MY LORD,

Your Lordship's

Most obliged,

and obedient Servant,

T H O M A S S H O R T.



A N

INTRODUCTORY PREFACE,

CONTAINING THE

Natural History of TEA.



S those who pass through a Crowd in Hurry and Confusion, are usually dazzled with the Multitude, and their Sight, fuller of Employment than Instruction, is led away and lost upon the Incongruities which cluster about it; so many pass through this World, shifting themselves superficially through every Tumult of Objects and Ideas, till the Variety destroys the Faculty of Discrimination, and the Mind, cover'd over with the faint and broken Impressions of many Things, affords no faithful or distinct Remonstrance of any.

But for those Degrees of Knowledge, whereunto Mankind has already attained in the Works of the Creation, it has been providentially allotted that some of our Species in all Ages could withstand and sequester themselves from that Multiplicity, wherewith the great Creator has enriched it, suitable to his own Infinity; and which otherwise, so continually soliciting our Senses, would confound our Apprehensions of them.

Thus in the lowest, but largest Sphere of Life, the *vegetable World*, many learned Men, of this more patient and persevering Genius, finding the Principles and Properties even of individual Objects too copious for

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them fully to comprehend, have with good Reason despair'd of succeeding better upon a Diversity of them; especially seeing that the meanest of Simples have as effectually preserved the Fame and Memory of the Dead, as ever the most Sovereign Compounds have the Health of the Living. Princes themselves, such as *Lyfimachus*, *Gentius*, *Clymenos*, *Artemisia*, and many others, might have perished in Oblivion long ago, had not their Discovery of some Plant, or its Virtues, entitled them to a signal Transmission of their Names, in a most visible and verdant Manner, I may say, to all Countries, and to all Ages.

Nay we read, that a certain People of *Spain* were upon no other Account famous or memorable, than for having found out the Nature and Qualities of the Herb *Betony*: And *Antoninus Musa*, Physician to the Emperor *Augustus*, wrote a particular Book of the Virtues thereof. *Themiston* also, a Physician among the Ancients, wrote a whole Volume on the Herb *Plantain*. And with the Moderns, Examples of this kind are numerous: Among whom I may take Notice, that Dr. *Martin Blockwich* has wrote an entire Book, and drawn a whole Dispensatory out of the *Elder Tree*; Dr. *Mich. Feber* has given us a Treatise upon *Wormwood*; Dr. *Ferdinand Hertodt* one upon *Saffron*; *Ben. Scharsius* one upon the *Juniper*; *Geo. Christoph. Petrus* another on *Carduus Benedictus*. And later yet, *Joan. Franci* two Pieces, one on *Trefoil*, and another on *Wood-sorrel*. In our own Nation, we have a Book written on *Pepper* by Dr. *Walter Baley*, Physician to Queen *Elizabeth*. Another by *Mackaile* upon *Mace*; Dr. *Gideon Harvey* wrote a particular Discourse on the *Jesuits Bark*; and Dr. *Sherley* has translated *Mollenbroccius's* Book upon *Scurvy Grass*. But to descend yet nearer to our Purpose, Dr. *Stubbs* has publish'd a Book upon *Chocolate*; Mr. *Bradley*, the Botanick Professor at *Cambridge*, upon *Coffee*; and Dr. *Ovington* upon *Tea*, &c.

But this, and several other *European* Authors, who have publish'd separate Tracts upon this *Indian* Plant, have implicitly taken their Materials upon Trust, either from such Travellers as have observed only the Description, Culture or Use of it, more peculiar to the *Eastern* Countries, or from the Merchants, and such as have endow'd it with Virtues at Random, to enhance their own Importations. And even such as have pretended to give us its medicinal Qualities, have afforded us very little satisfactory Light into its Principles, and yet a less rational Account why or how we are to expect such agreeable and surprizing Effects from its Use; not having adapted it to different Constitutions, Ages, Climates, Sex, and different Exercises of Life: So that we know of nothing to this Day, either in Food or Physick, which answers this Variety to the Advantage

Advantage of all; for does not *Tea* throw some Persons into Vapours, affect their Complexion, Spirits, Nerves, so as to apprehend themselves either dying, or dangerously ill? In others, it struggles against Retention, gives them the Cholick, or Gripes; and affects not a few with Tremors, &c. Nor, as far as I can remember, have these Authors proportion'd its Strength, Quantities and Use, to any distinct or designed Purposes; wherefore, I see no Reason to retract the following Discourse as an unnecessary Repetition; but rather enough to wonder, that out of so much as has been writ upon *Tea*, we should find so little to the Purpose.

For I hope to prove that the various Considerations which have been offer'd, are not sufficient in Respect to the Plant it self, much less to the People, the different Nations and Constitutions that have accustom'd themselves to it; and since the Infusion hereof is become a Liquor so universal, 'tis reasonable the Knowledge of its Nature and Virtues should be so too. It has so singularly prevail'd in *England*, for these forty or fifty Years past, among all Persons, (except of the very lowest Rank) and has been so taking with the fair Sex, that 'twere a Shame our Examination and Understanding should not bear some Proportion to the Use and Preference we have made of it.

Whoever well considers, what a superior Figure this humble Shrub makes in Commerce, what an important Article 'tis in the Traffick of the *East-India* Companies, what a great Revenue the Duty upon this little crumbled Leaf returns to the Crown of *England*, whereby the general Taxes are so much lessen'd to the Poor; whoever further observes, after all this, the Trade it variously advances, the Equipage, and all its Concomitants; and lastly, the Societies it assembles, there being more than three thousand Houses of Reception for them in *London*, as a certain Author computes^a, where this Liquor is daily drunk; whoever would remark the Business, Conversation and Intelligence it there promotes, as also the Expence and Debauchery it prevents, will readily conclude with me, that this, as well as other Things, demands our Observance and Regard, not according to the simple Appearance it makes, but the Consequences which flow from it.

What we call *Tea*, the *Japanese* call *Tcha*, *Tchia*, *Tsjaa*, and the *Chinese*, *Thee* or *Thea*. Its Leaf is neither like that of our wild *Daisy*^b, nor that of the *Myrtle*^c, which Mistake made the Jesuit *Trigantius* think,

^a *Dictionnaire universel de L'Abbé Furetiere*, Fol. 1725. Tom. 3. en l'Article de cette Plante,

^b *Bontius, de Med. Indior. Dialog. 6^{to}.*

^c *As Sim. Paul de Thee*, p. 19, 20. would have us believe.

think, that several of our *European* Woods and Forests abound with a true *Tea*^d; but when young and tender, it comes nearest, except in Colour, the Leaf of the common *Spindle-tree* with red Berries; and, when full grown, the Leaves of the *Morella Cherry-tree*^e. Neither the *Chinese*, nor *Japanese*, in their learned Languages, have any hieroglyphick Character for *Tea*, which at once might give some Idea of the Thing express'd, though they have some Characters, which either merely express the Sound of the Word, or allude to the Virtues and Description of the Plant. Of the first Sort is *Tcha*, which some learned Men think comes from the ancient *Tartarian* Word *Cha*: And upon this Account, and also because several Merchants yearly export large Quantities of *Tea* out of *Tartary* into *Persia*, they will have the *Tea-tree* to be originally a Native of *Tartary*; and that the *Chinese*, at, or since their Conquest of *China*, have learned the Use and Virtues of this Leaf from the *Tartars*, in whose Countrey they say it grows plentifully^f. But the too great Vivacity of these Mens Genius, destroys their own Allegation: For, 1. Does great Plenty of *Tea* grow in *Tartary*, and is it as little valued? How is it probable then that the *Tartars* should recommend that to the *Chinese*s, seeing they were Strangers to its Virtues and Uses themselves? 2. The *Tartar* King of *Ninchi* began not his first Incursions into *China* before the Year 1616, and then he only made himself Master of a Province or two, and so sent a Letter to the Emperor of *China*, petitioning for an Abatement of the grievous and insupportable Taxes impos'd by the *Chinese* upon *Tartary*, (which was then under their Government) for Prevention of the Barbarities committed by the Emperor's Army kept in *Tartary*, and Satisfaction for his Father's Murder: But the Emperor, being above fourscore Years old, neglected his Letter, and return'd no favourable Answer to his Requests; after which there was a long War betwixt them, till the Year 1650, when the *Tartars* made themselves entire Masters of that vast Empire. But *Bontius*, and several others who travell'd and wrote before the End of the sixteenth Century, mention the general and great Use of *Tea* at that Time, which was above twenty Years before the *Tartars* came into that Countrey.

As to these Characters, which allude to the Virtues and Descriptions of *Tea*, such is that of the Eye-brows of *Darma*^g, used by the *Japanese*.

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^d *Trigant. de Reg. Chin. lib. 3.*

^e *Kempfer's Travels, Appendix to Vol.*

II. p. 1.

^f *Sim. Paul de Thee, p. 25. Clearius's Ambassadors Travels in Persia, p. 241.*

^g This *Darma* was an eminent Pagan Saint,

The fore-cited Author ^h having given us the best and fullest Account of the Culture, Growth, Preparation and Differences of *Tea*, I shall here acknowledge my Obligation to him for several Things in the following Discourse. The *Tea-tree* is a Shrub that grows but slowly; it rises to a Fathom high, and higher, and has a black woody irregular branched Root: Its Bark is dry, thin, weak, Chesnut colour'd, greyish on the Stem, and somewhat inclined to Green on the Extremities of the Twigs; 'tis firm, and adheres closely to the Wood, and is covered with a very thin Skin, which sometimes loosens of itself as the Bark grows dry; this being removed, the Bark appears of a greenish Colour, and smells somewhat like the *Hazle-tree* Leaves, but more disagreeable and offensive, and of a bitter, nauseous and astringent Taste.

The Wood is hard and fibrous, of a greenish Colour inclining to white, of a very offensive Smell when green, the Pitch, which is very small, sticks close to the Wood.

The Branches and Twigs are many in Number, growing without any Order, slender, of different Sizes, though short in the main, wanting those Rings which in Trees and Shrubs are the Mark of their annual Increase; very thick beset with Leaves, without any Order, on short, fat, green Foot-Stalks, roundish and smooth on the Back, but hollow, and somewhat compress'd. On the opposite Side stand the Leaves: These are of a middle Substance between membranaceous and fleshy; in Substance, Shape, Colour, and Size, when full grown, like those of the *Morella Cherry-tree*,

Saint, who lived about the 519th Year of *Christ*: He was the third Son of *Kasimwo*, an *Indian* King, and a kind of Pope, being the 28th Successor of the Holy See of *Siaka*, the Founder of their Paganism, who was a Negroe born, 1023 Years before *Christ*. *Darma* was a most austere Man, who, from an Aim at perfect Holiness, resolved to deny himself all Rest, Sleep, and Relaxation of his Body, and consecrate his Mind Day and Night, without Intermission, to God: After he had watched many Years, one Day being weary and over-fasted, he unluckily dropt asleep; awaking the next Morning, full of Sorrow for breaking his solemn Vow, he cut off both his Eye-brows, those Instruments of his Crime, and with Indignation threw them to the Ground: Returning the next Day to the same Place, behold, out of his Eye-brows were grown two

beautiful *Tea* Shrubs. *Darma* eating some of the Leaves, was presently fill'd with new Joy, and Strength to pursue his divine Meditations: He presently communicated to his Disciples the great Benefit he found from *Tea*; which they publish'd to Mankind. Thus were the Virtues of *Tea* discover'd to the World, say the *Japanese*. This Fable might arise either from its Serviceableness in some Diseases of the Eyes, or from its Force in preventing too much Drowsiness in such an austere Man: And its Use at first (as of all other Things) was no doubt accidental. Hence it's brought in as produc'd by a Miracle, wrought above 1200 Years ago. However this sufficiently shews, that it is no new Discovery to the *Indians*, nor are they obliged to the *Tartars* for it. ^h *Kempfer*, in the Appendix to the 2d Vol. of his Hist. of *Japan*.

Cherry-tree, but when young and tender they resemble (except in Colour, as before remark'd) the *Spindle-tree* with red Berries, called *Euonymus*. The larger Leaves are two Inches long, and one broad, or but little less; from a small Beginning they become roundish and broader, and then taper into a sharp Point; some are of an oval Shape somewhat bent, and irregularly undulated lengthways, depress'd in the Middle, with the Extremities roll'd backwards; they are smooth on both Sides, of a dirty green Colour, somewhat lighter on the Back, where the Nerves being rais'd pretty much leave so many Hollows or Furrows on the opposite Side; they are serrated or indented, the Teeth being a little bent, hard, obtuse and set close together, but of different Sizes; they have one very conspicuous Nerve in the Middle, to which answers a deep Furrow on the other Side; 'tis branched on each Side into five, six, or seven thin transverse Ribs of different Lengths, and bent backward near the Edges of the Leaves; some smaller Veins run between the transverse Ribs.

The Leaves, when fresh, are destitute of Smell, and are not so ungrateful to the Taste as the Bark, being astringent indeed and bitterish, but not nauseous. They differ in Substance, Size, and Shape, according to the different Age, Situation, and Nature of the Soil wherein they grow: Were they infus'd and drank when they are fresh or green, they would much affect the Body, especially the Hands; for being Narcotick, they wou'd occasion a trembling and convulsive Motion in the Nerves, but this Quality they lose in the drying and rolling, which expresses that clammy, yellowish, corrosive Juice that causes these Tremors; yea, so corrosive sometimes is this Juice, that it excoriates the Hands of the Roasters and Rollers.

The Branches are thick beset with Flowers, one or two together, much like our wild Roses, an Inch or somewhat more in Diameter, having little Smell, compos'd of six round, hollow *Petala* or Leaves, standing on Foot-Stalks of an Inch long, which from a slender beginning insensibly grow larger, and end in an uncertain Number, commonly five or six, of small, round *Squamæ*, or Leaves, which serve instead of the *Lalix*. These Flowers continue growing till late in the Winter, one or two whereof are generally sick, shrunk, and fall far short of the Largeness and Beauty of the rest; they have a very disagreeable bitterish Taste, which chiefly affects the Basis of the Tongue.

Within the Flower are many white *Stamina*, exceeding small, as in Roses, with yellow Heads shap'd like a Heart.; in one Flower there are sometimes one Hundred and thirty of these *Stamina*. The Flowers are succeeded by great Plenty of Fruit which is unilocular, bicapular, but more commonly trilocular, like the Seed-Vessels of the *Ricinus*, or *Palma Christi*,

Christi, compos'd of three round *Capsulæ* of the bigness of wild Plums, grown together to one common Foot-Stalk as to a Center, but distinguish'd by three pretty deep Partitions; each *Capsulæ* contains a Husk, Nut, and Seed: The Nut is almost round on one side only, where the three *Capsulæ* grow together, somewhat compress'd, cover'd with a thin, hardish, shining, Chestnut-colour'd Shell, which being crack'd, discovers a reddish Kernel of a firm Substance like Filberds, at first of a sweetish, but not very agreeable Taste, which soon grows rougher and bitter, like that of the *Cherry-Seeds*, making People spit very plentifully, and very nauseous when they fall down into the Throat, but this ill Taste quickly goes off. These Kernels contain a great Quantity of Oil, and often turn rancid, which is the Reason why scarce two of a Dozen will germinate when sown, and this probably has occasion'd the Frustration of our *European* Attempts to raise this Shrub.

The Natives do not allow this Shrub any particular Gardens or Fields, but plant it round the Hedges and Borders of their other Fields, with Regard to the Soil; nor do they lay their Seeds in Rows, which would make it grow up into Hedges, but at some Distance from each other, that when the Shrub comes to spread, the growing too close together may not hinder their plucking off the Leaves. They put at least six, and mostly twelve Seeds, as they are contained in their Seed Vessels, into one Hole made about five Inches deep, because few are found to germinate.

As the *Tea-Bushes* rise in *Japan*, the more industrious People fatten the Soil where they grow, once a Year, with humane Dung mix'd with Earth. The Shrub must at least be three Years old before the Leaves are pluck'd, and then it bears Plenty of very good ones; in seven Years Time, or thereabout, the Shrub rises to a Man's height; but then it grows but slowly, and bears few Leaves; but if cut down to the Stem, new Sets of Branches and Twigs shoot out thicker, and much more numerous than before, and all nourish'd by the same Root. The young Shoots, as they come up the first Year from the Stem, are always fewer in Number, but fatter and larger than those which succeed them; in Process of Time they become branched. When several Seeds are put together into one Hole, sometimes two or three Shrubs come up together so closely joyn'd, that the ignorant or less attentive would readily take them for one Stem.

When the Leaves are ready, the Labourers, hired for that Purpose, do not pluck them by handfuls, but singly, one by one, lest they should tear them: Neither do they gather them all at one Season. They begin their first gathering at the middle of the first Moon, preceding the
vernal

vernal Equinox, which is the first Month of the *Japanese* Year; the Leaves then are very few, but very tender and young, being only of two or three Days growth, and scarce fully open'd; these are accounted the best, and sold dearest of all, being bought by their Princes and great Men at a high Rate, and are therefore call'd the Flower of *Tea*, which probably occasion'd that Mistake, that the *Indians* used the Flowers of *Tea*, which they do not. This first Sort is called *Voui*, *Bui*, or *Bohea Tea* of the *Chinese*. The next or second Gathering is often sold for the first, and therefore the smaller are carefully pick'd and separated from the larger and coarser Leaves. Their third and last Gathering is in the third *Japanese* Month, or our *June*; this is most plentiful, the Leaves being now come to their full Growth, both as to their Number and Largeness; many pass the two former, and depend wholly on this Gathering, the Leaves whereof are all sorted into their different Classes of Size and Goodness, which the *Japanese* call *Itziban*, *Niban*, and *Sanban*, that is, the first, second, and third; the last is the coarsest of all, being full two Months grown, and is the Tipple of the Vulgar. These Day-Labourers, which are hired to gather the *Tea*, will each of them gather nine or ten *Catti* apiece in a Day, that is twelve Pound and a half of *Dutch* Weight, for one *Catti* is a *Dutch* Pound and a Quarter; whereas their own Domesticks, who are not accustomed to it, would not pluck above two or three *Catti* apiece in a Day.

The *Japanese* call the first gather'd *Tea*, *Picki Tsjaa*, or Ground *Tea*, because they grind it to Powder, and sip it in hot Water. The same Sort is also called *Udji Tsjaa*, and *Tacke Sacki Tsjaa*, from the particular Places where it grows, the Soil of those Places being very good, and because it is gather'd off Shrubs of three Years old, which are then at their greatest Perfection; for the Soil and Age of the Shrub contribute much to the Goodness of the Leaf, as well as the Growth and Largeness thereof, though the last is not always a Proof of their Goodness, except they be tender also.

Udji is a small Town, situated in a District of the same Name, near the Sea-Coast on one Side, and *Miaco* (the capital City and Residence of the ecclesiastical hereditary Emperor of *Japan*) on the other Side: This Climate is exceeding favourable for the Culture of *Tea*, which is reckon'd the best of the Countrey, and is drunk at the Emperor's Court, and in the Imperial Family. The Shrubs are planted as it were in pleasant Walks on a Mountain, inclosed with Hedges for their Security, and frequently cleans'd, that no Dirt may be found on their Leaver. Two or three Weeks before the Labourers begin to gather them, they must abstain from eating Fish, or any unclean Food, lest the Impurity of their

their Breath stain the Leaves, or injure their Goodness; and when they are gathering, they must bath themselves twice or thrice a Day, either in a hot Bath or River, and gather with Gloves on, not being allowed to touch the Leaves with their naked Hands: Which being thus gather'd, and prepared, are put into Paper Bags, and these into larger Earthen or Porcellane Pots, fill'd up with common *Tea*, for the better Preservation of the other; which being thus pack'd, the Emperor's chief Surveyor of the Works of this Mountain, sends them to Court under a good Guard, with a numerous Attendance, for the Emperor's greater Grandeur. This raises the Price of this *Imperial Tea*, from forty two to fifty six Crowns a Pound; nay, the chief Surveyor sometimes charges it at a hundred or a hundred and forty Crowns, three or four *Catti* of it being sent to Court under a Guard of two hundred Men to attend it: A single Dish of it is sometimes valued at twelve Shillings.

The Leaves of the second *Tea* are called *Tootsjaa*, or *Chinese Tea*, being prepared after the *Chinese* Manner. The *Tea*-Merchants and Shopkeepers of *Japan*, divide this into four others, which differ in Goodness and Price; the first gather'd when the Leaves just appear; then every young Branch bears not above two or three, and these yet un-opened; one *Dutch* Pound and a Quarter of this is sold from to thirty *Dutch* Stivers: The Leaves of the second Sort are older and more grown, though gather'd not long after the first, the same Quantity of this is sold at forty or forty five Stivers. The Leaves of the third Sort are still older and larger, and worth from about twenty three to thirty five Stivers, or Silver *Maas*, *per Catti*. The greatest Quantity of the *Tea* imported into *Europe*, is of this Sort, and sold by the *Dutch* at six or or seven Gilders *per* Pound: Those who cry it about the Streets in *Japan*, sell it for three *Maas*, or twenty four Stivers *per Catti*, for 'tis of this that the Generality of the Natives drink.

The third sort of *Tea* is *Ban Tsjaa*, these Leaves being of the last Gathering, are mostly too gross and coarse to be dry'd in Pans over the Fire, after the *Chinese* Manner; but being for the Vulgar, Labourers, and Countrey-People, are prepared any how. The longer this sort is kept, the better it is; its Virtues being fix'd in the gross Leaves, are not so readily lost, either by being expos'd to the Air, or by boiling; but the Leaves of the other two having extreme volatile Parts, suffer great Prejudice by being expos'd to the Air, infus'd or boiled.

When the Leaves are gather'd, they are brought to the Work-house to be roasted, the same Day, over a Fire in an Iron-Pan; for if they lie long, or be laid on large Heaps, or kept over Night, they would heat, turn black, and lose much of their Virtue; and if they do heat at any

Time, they presently fan them, and spread them thin on the Ground to cool them. The Roasters put several Pounds of the Leaves into the Pan at once, which is so heated, that the Leaves, though turgid and juicy when put in, yet soon crack at the Edges of the Pan: And that they may be thoroughly and equally dried, the Roaster constantly stirs them with his Hands, till they are as hot as he can possibly bear them, and then he takes them out with a Shovel like a Fan, and pours them on a Mat, when the Rollers roll them with the Palms of their Hands, in small Parcels, till they are equally curld; and such a sharp, yellow, and greenish Juice sweats out of the Leaves upon this rolling, as burns their Hands almost to an intolerable Degree: But still they must continue their Work, for if the Leaves are quite cold before they are rolled, they will either not curl, or not keep it long; but the sooner they cool after they are rolled the better, for then they keep their Curl the longer; and therefore they have one to fan while another is rolling them. When they are cold, the Roaster (who is the chief Master of the Work-house) puts them a second Time into the Pans, and roasts them again, till they have lost all their Juice; and now he stirs them more slowly than before, lest he put them out of their Curls, though some Leaves will spread in Spite of all his Care. After this roasting they are carefully roll'd again the same Way. If after this they are fully dry, they have done; if not, they are deliver'd a third Time to the Roaster, and then his utmost Care and Skill is necessary, lest he burn or blacken the Leaves. Some curious Persons roast and roll them six or seven Times, but use a slower Fire, that they may keep their fine Greenness; and because of the exceeding sharp Juice which sweats out of them, the Pan is washed clean after every roasting. The *Chinese*, before they roast their Leaves of the first gathering, put them into hot Water about half a Minute, that they may sooner and more fully exude their narcotick Juice.

When they have done roasting and rolling them, they pour them out upon a Mat, and sort them a second Time into different Classes according to their Goodness, and separate those which are less curl'd, or too much burnt, from the rest. Countrey-People roast their Leaves in earthen Kettles, and as they are at less Expence this Way, so they can afford them cheaper, though they are not much worse. The *Tea* must be all roasted in the Night, being gathered in the Day, which makes the Preparers of it complain heartily of their hard Fate. When the Leaves have been kept some Months after the first roasting, they are roasted again, to deprive them of any remaining Moisture, or what they may have since imbibed from the Air.

As soon as the *Tea* is cold after this second roasting and curling, the *Chinese* put it up into Boxes of coarse Tin, which are inclosed in wooden Chests, or Cases of Fir, all the Clefs whereof are carefully stop'd with Paper, that the Air of those Climates may not dissipate its extreme subtile and volatile Parts, and in this Manner we have it imported hither. Those Tubs, or Chests, one with another, contain about a hundred and twelve Pounds of *Tea* apiece, and sometimes six or seven thousand of those Chests are retain'd from the first, and put up in a second or after-Sale of the *English East-India* Goodsⁱ; one of their Ships sometimes imports four hundred thousand Pounds for one Article of her Cargo^k.

The common People of *Japan* keep their own *Tea* in large earthen Pots with narrow Mouths; but the Emperor has his in *Maatsubo's*^l, which they think not only preserve but improve its Goodness: However they will keep powder'd *Tea* many Months without the least Hurt or Damage.

Tea has been known in *Europe* above a hundred and twenty Years, for the *Dutch East-India* Company, (who first imported, and rais'd its Reputa-

ⁱ In *September* the last Year 1728, 6867 Chests were put up at a second or after-Sale, which amount to 769104 *lib.* of *Tea*, the Duty whereof is about 153820 *l.* Sterling.

^k The Bill of Cargo of the *Cæsar*, of *May* 17. 1726, has 358100 *lib.* of *Tea*, for one Article, the Duty of which is 71620 *l.* Sterling.

^l *Maatsubo*, is a kind of Porcellane Pots or Vessels, sought for by divers, and found among the Rocks of the Sea, near the Island *Formosa*, where the once rich and flourishing Island *Mauvi* stood, (which had the best Earth, and the most ingenious noted People for making the richest and finest Porcellane in the World) but 'tis long ago sunk, and only some small Tops of the Rocks are to be seen at low Water. The King of this Island, being a pious Man, was warned in a Dream by the Gods, that when the Faces of the two famous Images, which the People worshipped, were red, the Island should suddenly be destroyed for the great Wickedness of its Inhabitants. Two notorious Villains, hearing of the King's Dream, went in the

Night and colour'd both the Faces of the Images red; the King hearing of it, took Shipping, immediately went off, and arrived in the South of *China*, where the Day of his Arrival is annually observ'd. As soon as he was gone, the whole Island sunk, and all its fine Porcellane with it; and these Vessels, taken up by Divers, are sold at an extravagant Rate, *viz.* from twenty to a hundred or two hundred *Thails* apiece; these are small, have several Cracks and Fissures, and many Shells stick to them; but such as are large and sound are the Emperor's Property only, and are purchased at three, four, or five thousand *Thails*: A *Thail* is ten Silver *Maas*, and ten *Maas* are seventy *Dutch Stivers*, twelve of which are equal to thirteen Pence of our Money.

These must be the *Tea*-Pots, which *Maudelso* says (in his Travels to the *Indies*, p. 156.) are worth between six and seven thousand Pound Sterling apiece; they are shap'd like small Barrels, or Wine Vessels, of a whitish Colour inclining to green, with a short narrow Neck. *Kempfer*, Append. to History of *Japan*.

Reputation in *Europe*) was founded *A.D.* 1602. upon a Contribution at their first Settlement of 6459840 Florins. The *English East-India* Company was form'd near the latter End of Queen *Elizabeth's* Reign, their Charter being dated *A.D.* 1599, and their first Fleet set out in 1600. But they made no Figure before King *James I.* bestow'd his Favours upon them. The *French East-India* Company was established in 1664.

The *Dutch*, in their second Voyage to *China*, carry'd thither good Store of dried Sage, and exchanged it with the *Chinese* for *Tea*; they had three or four Pound of the last for one Pound of the first, calling it a wonderful *European* Herb, possess'd of as many Virtues as the *Indians* could possibly ascribe to their Sbrub-Leaf: But because they exported not such large Quantities of Sage as they imported of *Tea*, they bought a great deal, and gave eight Pence or ten Pence a Pound for it in *China*^m. And when they first brought it to *Paris*, they sold it there for thirty Livres a Poundⁿ, though 'twas not of the best sort, for that comes from *Japan*, and has often been sold at a hundred Livres a Pound^o: But about thirty Years ago, the *Chinese* sold it at three Pence, and never above nine Pence a Pound, but frequently mix'd with other Herbs to increase its Quantity^p.

Though it seems to have been brought into *England* in the Reign of King *James I.* yet 'twas little taken Notice of before the Usurpation, when it was imported in such large Quantities, that it came under the Cognizance of the Government; for in 1660, a Duty of eight Pence *per* Gallon, was laid on the Liquor made and sold in all Coffee-houses^q, which was no small Prejudice to the Liquor, and Inconvenience to the Drinker, for the Excise Officer was to survey it before any should be sold, and was not oblig'd to attend above once or twice a Day. And ever since that Time the Duty upon *Tea* has been one of the hereditary Customs to the Crown, though the Parliament has at sundry Times, by different Acts, fix'd divers Duties upon it, but the last is the most commodious of all, being only four Shillings *per* Pound, payable by the Sellers of the Leaf, no Duty nor Inspection to be made of the Liquor or its Makers.

Japan, *China*, and *Siam*, are the only Places which afford us *Tea*, and that from the first is most valu'd, being usually of a finer clear Green, having a smaller Leaf, and more delicious Smell and Taste than the other; which

^m Father *Alex. Rhodes*.

ⁿ *i. e.* about fifty Shillings.

^o About 8*l.* 6*s.* 8*d.*

^p *Kempfer's History of Japan*.

^q But whether this was the first Impost,

or whether it was only renewed, as the Duty on Malt-Liquor was, upon the Parliaments annulling all *Cromwell's* Acts and Laws, I cannot say.

which raised its Price in *France* to 200 Livres *per* Pound, till Coffee and Chocolate were more generally us'd, which reduc'd both the Price and Esteem of the former¹.

Tavernier says, the King and Nobility of *Tunquin* prefer the Flower of *Tea* as most wholesome and pleasant, which makes it dearer and more valuable; for, says he, as much of this Liquor as will fill one of our ordinary Beer-Glasses is there worth a *French* Crown. But *Conorius*, who liv'd several Years in *Japan*, assures us, that the Flowers are of no Esteem, the main Virtue being lodged in the Leaf: And what led *Tavernier*, and several others into this Mistake, was, that the small Leaves which are first pluck'd, when they are not above forty eight or fifty Hours old, are called the Flower or Prince of *Tea*, being most valu'd and sold at an extravagant Rate, *viz.* from 45 to 140 Crowns *per* Pound.

We have only two Sorts imported to us, *viz.* *Green* and *Bohea*; the *Europeans* contracted their first Acquaintance with, and mostly used the *Green*^s: Then *Bohea* took place of it, probably because the *Chinese*, if they are weak, chiefly confine themselves to this Kind, and ascribe to it a singular Virtue of Healing and preventing Diseases, and applaud it as the Balsam of Life to the human Machine; but we find, generally speaking, that *Green Tea* answers our Purposes better, and is therefore chiefly used by the Quality, which has reduced the Price of *Bohea*, and raised this.

Of *Bohea*, called by the *Chinese* *Voui*, or *Bui*, we have the following Sorts imported, *viz.* 1. *Pekoe*, which has the most pleasant and delicate Flavour of all this first Class; its Leaf is very small and black, and has many small white Flowers mix'd with it; its Liquor is not of so deep a Tincture as the rest, and creams briskly when pour'd out; the Water must stand on it a considerable Time to draw out its Virtues, and 'twill bear four or five sundry Waters. The closer Connection, or Cohesion of its Principles, renders it more Balsamic, and also hereby it grows better by keeping, which is the Reverse of *Green Tea*. The Price of this at present is 15 s. *per* Pound with us. 2. *Congo*, which has a larger Leaf, and is of a deeper brown Colour than the former; this will bear five Waters, but then they must not stand long upon it, for unless the Water is presently pour'd off, the whole Strength of the *Tea* will be drawn out at once. Hence, if you mix *Pekoe* and *Congo*, you shall have an admirable fine *Tea*; you have all the Goodness of the last in the first two Waters, and of the first in the last two or three, but even then the Water

¹ See *Pomet's* History of Drugs, p. 84.

² See Append. to *Schroder's* Pharm. p. 8.

³ This is all bought at *Nankin*, as *Cham-*

bers says in his *Cyclopædia*, Tom. 2. the *Dutch* have but lately introduced it into *Europe*.

Water should not stand long. This is sold at 14s. a Pound. 3. Common *Bohea* is blacker and larger leav'd than either of the former, and smells and tastes more faint, not unlike dry'd Hay; it gives the Water the deepest Tincture of all, and two or three Waters draw out its Strength and Virtue. Price 12s. *per* Pound.

The different Sorts of *Green Tea* are these, 1. *Hysson*, so called from the Name of a rich *East-India* Merchant, who was the first Importer of it; it has a smaller, harder, and more curled Leaf than the common *Green*; 'tis of a more blue Colour, tastes crisp in the Mouth when chew'd, and afterwards looks green upon the Hand: It scarce tinctures the Water (with a pale greenness) when strongest, and yet is of a most delicious Taste. All, or most, of the Leaves should be of a clear bluish Green; for if they seem decay'd, or look brown or blackish, the *Tea* is old, and has lost Part of its Virtue: Or if you pour out a Cupfull of its Liquor, and let it stand all Night, if its Colour continues, then 'tis good; but if that fades, its Virtues are gone, especially if its delicate Smell and bitterish-sweet Taste be impair'd. This *Tea* will bear four or five Waters, and requires not so much *Tea* to the same Quantity of Water, as the other. 'Tis seldom us'd alone, but mixt with common *Green*, one Part to three of the last. The Price is 36s. *per* Pound. 2. *Imperial Green Tea*; this is of a lighter green Colour, has a more flat, large, loose Leaf than either the last or those which follow: 'Tis green to the Eye, crisp in the Mouth, and pretty pleasant to the Smell, but has the faintest Taste of any *Green Tea*. Its specifick Gravity is the least of all, its Principles sit loosest, and therefore two Waters will draw off its Strength. Price 18s. *per* Pound. 3. Common *Green Tea* of the better Sort, has not so large a Leaf as the last, is of a darker green Colour, rougher, and more astringent to the Taste; 'twill bear three or four Waters. Price 15s. *per* Pound. 4. Ordinary *Green Tea* is yet of a darker (or if very coarse, of a light whitish Green) Colour, neither so pleasant to the Taste nor Smell, and is sooner drawn off. Price 13s. *per* Pound. 5. *Dutch Bloom* is a very fine *Green Tea*, and bears a proportionable Rate; 'tis, probably, one of the *Japan Teas*, but having seen none of it, I will not pretend to describe or judge. 6. There grows also a very rough, coarse, unpleasant *Green Tea* in the Northern Province of *Xenfi*, which the hardy *Canibal Tartars*, the present Masters of *China*, use, whose delicate Dish is raw Horse-flesh, and when their Dinner sits uneasy upon their Stomach, they drink of this, and it rarely fails to restore their Appetite and Digestion.

The subtle *Chinese* have several Ways to falsify *Tea*, both in preparing and putting of it up, a Detection whereof will be no less advantageous to the Merchant, than satisfactory to the Drinker. 1. They formerly

us'd to mix a good many Leaves of other Shrubs with it, though one would think the Profit would scarce answer their Labour. The Fraud, if not visible at first to the Eye, is thus discover'd: Make a Pot of genuine *Tea*, and another of the supposed adulterated Leaves, pour out a Dish of each, and put a Grain and a half of *Blue Vitriol* or *Coperas* into each Cup; this turns the *Green Tea*, if genuine, and in a good Light, of a fine light blue, and *Bohea* of a deep blue next to black; (but if this be done by Candle-light, both will appear black;) if they be adulterated they will have a Mixture of other Colours in them, as green, yellow, black, greyish, &c. 2. They us'd to put a coarse *Tea* in the Bottom and Middle of their Torenage, and a fine *Tea* at Top, or put a fine *Tea* both at Top and Bottom, and a coarser in the Middle, 'till the Buyer detected that also. 3. They then fell to dying *Tea* with *Japan* Earth, which gives the Leaf the Colour, and the Infusion the Tincture of *Bohea*. One would wonder where they should find their Profit in this, if the *Green Tea* was good, especially now when this last is so much dearer than *Bohea*. Either the last must be of more Account in other Countries, or that which they dye must be spoil'd in the Preparation, or damag'd by keeping: However this profuse Use of *Japan* Earth, seems to be the Reason of its present great Advancement from 4d. to 18s. a Pound. But the following Marks will plainly discover this Fraud, 1. A lesser Quantity of this sort of *Tea* tinges the same Proportion of Water of a deeper Colour than it should be. 2. It tinges it, not of a dark, but more reddish Brown. 3. After the Leaves have been sometime infus'd in the Water, and the Tincture is wash'd off, they look greener than they should do, if the *Tea* was good: Or, if they are damag'd for open Sale, as 'tis sometimes the Case, they are black or brown, or if they were laid on a Heap and heated before roasting, or if they have been burnt in roasting, or got Wet after they were roasted. 4. They are also much larger, being too old before they were pluck'd for *Bohea Tea*; therefore such as would avoid this Cheat should buy the least Leaf. 5. The Liquor itself which shou'd have a delicate Flavour, and a smooth, Balsamick Taste, is rougher and harsher to the Palate. 6. When Milk is pour'd into it, it rises reddish, and not of a dark or blackish brown. 7. A little *Coperas* put into this *Tea* turns it into a light blue, but shou'd make it, if good, of a deep blue inclining to black. 8. Spirit of Salt or Sulphur put to the last Mixture, clears it not, whereas it shou'd take off even the Tincture of the *Tea* itself, and make it clear. 9. Spirit of *Hartshorn* makes the *Tea* of a deep brownish yellow after it has stood a little, like new drawn Tincture of *Saffron*, but here it does not.

After

After all, I don't see what harm this Cheat can do, except to such as have too elastic Solids, and then the daily Use must tend to stiffen the Fibres, or contract the Vessels more, or to them whose Lungs are obstructed, or loaded with too much Matter; wherein the Person's Life depends upon Expectoration, and in these Cases it may do much Harm, first, by crisping up the obstructed Vessels, which should be relaxed; and secondly, by stopping the spitting, and loading the bronchial Vessels: And indeed the chief Use of *Bohea Tea* seems to be for such People, because *Green* is too astringent for them.

But as the Natives have a Dexterity in making artificial *Bohea*, so they can send us a counterfeit *Green*, by dying the first with green Vitriol, which cheating Trick is easily discovered, 1. By putting a little Bit of Gall into your Liquor, for if there's any Vitriol in the *Tea*; it presently turns it of a deep blackish Colour, which it should not do; for Galls tincture not this Liquor, except there be Copperas first in it. 2. The Liquor it self looks of a pale green, inclining to a bluish Dye. 3. Spirit of Hartshorn dropt into this *Tea* makes it somewhat of a slight Purple Colour, and causes a small Precipitation; whereas this Spirit should make it of a deep greenish yellow, when it has stood six Minutes. This dying with Vitriol is a much more mischievous Trick than the former.

The most likely Time for dying of *Tea* is, when they put the fresh gather'd Leaves into Water, before they are roasted; for then they need only mix their Powder of *Japan Earth*, or green Vitriol, with that Water, and wash their *Tea* in it, for the roasting of it after, fixes on those Colours when the Moisture of the Plant is exhaled.

The *Chinese*, *Japanese* and *Tartars*, prepare their *Tea* after different Manners; the last boil it in Milk, but this is very improper, because, 1. Milk either blunts or sheaths up the active, minute, saline Particles of the *Tea*; and therefore corpulent, cachectick, or hypocondriac Persons should neither boil it in Milk, nor put Cream to it; for thereby the Stimulation of the Liquor is destroyed, and instead thereof, it softens and lubricates still more, and generates new and greater Obstructions and Relaxations of the Vessels. 2. The boiling of the Milk exhales and loses its aqueous and minute Particles, which are fittest for Dilution, and Attenuation; hence the grosser, carthy, and caseous Parts are increased, all which have a direct Tendency to stuff and load obstructed Vessels still more. 3. The thinner Parts of the Milk being lost, the Vehicle is unfit to insinuate it self into the Leaves, and dissolve their delicate Salt, Oil and Earth; hence much of these continue wrapt up with the more mixed fix'd Parts, and are lost.

The *Japanese* powder their Leaves, and pour boiling Water on them, and so sip up both together: But by this Means, we are not only deprived of a clear Liquor, but the Substance of the Leaf, being an astringent, may act more forcibly on our Bodies than is consistent with an equal Balance between Relaxation and Contraction. This also makes the *Tea* of a more rough, earthy, disagreeable Taste; and if Astringents thicken the Blood, as well as draw up the Fibres, this kind of *Tea* must either be exceeding weak, or its Use will soon destroy the necessary *Æquilibrium* of Nature.

After the *Chinese*, who infuse their *Tea* in boiling Water as we do, have pour'd the Water from the Leaves, they prepare them for an Evening Salad with Sugar, Oyl and Vinegar.

I hope the various Processes, and sundry Methods here used, will atone for the Length of this Discourse, being not only new, but such as will also be serviceable to let us into a better Acquaintance with the Properties and Sortments of other Vegetables, and that to better Purpose, and more Satisfaction than the pompous, forced and tedious Experiments of the Furnace: For the Truth of which, we must depend on the Judgment and Veracity of the Chymist, besides Allowances to be made for a great many Coincidencies. And the celebrated *Boyle*, in his Observations *circa Noctulucam*, has justly observ'd, *Ignem non esse genuinam Analystin Concretorum, nec Chymicorum Principia esse talia: sed ex aliis concreta, & ex iisdem, alias Substantias diversas posse produci, &c.* But these Experiments are easy, and practicable by every curious Person on any Plant, without Expence, much Apparatus, Loss of Time, Danger to any Animal, or Acquaintance with the chymical Jargon of Words, more like Conjunction than Instruction.

I have preferr'd the Method of treating either *Tea*, or other Vegetables, by Infusion, rather than by Fire, 1. Because the last has been done so often already, that a Repetition would be only *Actum agere*. 2. Because *Tea* is always us'd in Infusion, and therefore to find out whether we have any domestick Vegetables of the like Nature, we must treat them in the same Manner. 3. Because the Fire, 1. Changes the essential Salts of Vegetables into a lixivious. 2. It either changes the Texture, or affords a most corrosive Acid, from Things that were entirely neutral before, as to either Acid or Alkali, as Spirits of Salt, Sulphur, Nitre, &c. which corrode and dissolve Metals, and instantly coagulate our Juices into a hard in separate Mass, and like an actual Cautery, corrode the Solids, and destroy them. 3. Very often the Fire, by separating the vegetable Principles, strips them of their Virtues; thus when *Senna* has pass'd

a chymical Analysis, it moves not the Belly, nor will the Bark cure Intermittents, &c. Therefore such Experiments as separate the grosser earthy Parts from the other finer Principles, without disuniting the last from one another at the same Time, seem most natural, and promise us the surest Account of their Effects. This is evident from the Experiments on the Infusion of *Cocculi Indici*, &c.

But if any Persons after all this, think them too tedious and extraneous to the Purpose, they may read the Discourse alone, without troubling themselves with the Notes, which contain these Experiments. What first induc'd me to attempt and pursue them, (and indeed gave Birth to this Dissertation) was the Repetition of some Tryals, made by *Pechlin*, *Le Compte*, and some others, which I found wholly false, and consequently their Reasoning and Conclusions from them so too.





A
DISSERTATION
UPON THE
NATURE and PROPERTIES
OF
TEA, &c.



EA has met with very different Treatment, according to the sundry Humours of those who have ventur'd publickly to offer their Sentiments upon it. Some ascribe such sovereign Virtues to this Exotick, as if 'twas able to eradicate or prevent the Spring of all Diseases; and extol it to a Degree that renders their Panegyrick too near a-kin to Satyr^u. Others, on the contrary, are equally severe in their

The opposi-
site Opinions
concerning
Tea.

D 2

Censures,

^u Dr. *Waldsmick*, Professor of Physick at *Marburg*, in *Disput. var. Argum.* 8^{vo}. calls it the Defence against the Enemies of

Health; the universal *Panacea*, which has long been search'd for. — It leaves no chronical Distemper unpluck'd up by the Roots.

Censures, and impute the most pernicious Consequences to it; accounting it no better than a slow, but efficacious Poyson, and a Seminary of Diseases*. And tho' its good Effects, in some Cases, are so glaringly evident, that they cannot deny it to be servicable in the Gout, Arthritic Pains, Rheumatism, Stoppage of Urine, &c. yet they roundly affirm the Benefit to be owing chiefly and properly to the warm Water; or however, if 'tis of any Service in these Instances, we run the Hazard, they say, of an Infection with foreign and worse Diseases, which lie secretly lurking in the imported Leaf; and not satisfy'd with venting their own Prejudices, they are forward to list all in their Service, and make 'em vote on their Side, who give us but necessary Cautions against the excessive and indiscreet Use of *Tea*†. But then to shew their good Nature, while they inveigh against, and would deprive us of this commonly pleasing, but dangerous Exotick, they kindly provide us with domestick Plants of greater Service, and more general Use, viz. *Betony, Marjoram, Male-Speedwell, Eyebright, Juniper-berries*; and in Fevers, *Scordium, China-root, Carduus benedictus, Scorzonera, &c.* Having thus vented their Spleen against the Plant itself, they turn their virulent Pens against the Merchants and Importers of it, and treat 'em in a Language shocking to a modest Ear‡.

Several Prejudices answered.

Others again seem to question the Virtues ascrib'd to *Tea*, and imagine them industriously magnify'd to promote and encourage the Importation thereof, and increase the Merchants Gain§. But, 1. What Profit or self-interested Views can any private Gentleman propose, by attempting to

Roots. — It is impossible for the Obstructions of the *Hypochondria*, and the Distempers which proceed therefrom, to withstand the Virtues of this healthful Herb; Oh admirable Virtue of *Tea*! Oh precious Treasure of Life! &c.

* *Job. Ludov. Hannemane*, de Potu calido, in Miscellan. curios. *Mibi multis de causis Potus ille adeo frequens suspectus est. 1. Propter nimiam copiam Aquæ. — Cachexiam, vel etiam Hydropem causetur. 5. Vitium Diabetis omnino metuendum est in istis Bibaculis Theæ. 6. Est Potus magis Politicus quam Medicus. & p. 162. 3. Exotica nostræ Naturæ sunt adversa. 5. Iisque Morbi peregrini in Terram nostram traducuntur, &c.* The two last Arguments equally hold good as to all imported Meats, Drinks and Medicines, to condemn which by Wholesale would be ridiculously malicious.

† As *Daniel, Cruger, Antony de Heide, D. D. Christian. Henric. Lusa, Thomas Bartholine, Simon Pauli, Jac. Wolfius, Bern. Swalvius, Henric. Maud, &c.*

‡ Charging them with inexpressible Frauds, calling them greedy as Hell, the vilest of Usurers, who lie in wait for Mens Purfes and Lives, most wicked Homicides, &c. *Hannaman*, p. 264. But, as 'tis common with others in the like Case, when this Author gives Liberty to his Prejudice and Passion, he falls into Contradictions in Argument, false *Latin*, and Puerility of Style.

§ Thus *Duncan* on hot Liquors. And a certain late Author, who from a Spite he bore to one of the *East-India* Company, wrote a very silly, but virulent Pamphlet against the Use of *Tea*.

to put such a Cheat upon the World in spinning out a long Panegyrick on a Plant, whose Use will not answer his Encomiums? All the Reward he is like to get for his Labour, is the just Censure and Reflection of the judicious Part of Mankind, who are not easily fooled by such false Cries. 2. What can induce the Physician or Botanist to commend some common-Herb, and ascribe more Virtues to it, (though but what his own Experience justifies) than all preceding Authors put together have before appropriated either to it or *Tea*? Can we suppose he ridiculously gives himself this Trouble from a fond and groundless Admiration of *what* others slight and despise, or from a Principle of Philanthropy, to communicate its Virtues and Usefulness to the more indigent Part of his Species? For sure this generous Principle must reside in the Breast of every reasonable Being, who is a worthy Member of that Society in which Providence hath placed him. But, 3. Though all the Virtues attributed to *Tea* belong to it, and be allowed just, yet we may easily be disappointed of its expected Efficacy: 1. When we are not proper Judges of it, and so have that which is damaged and adulterated put upon us, instead of that which is good and genuine. Or, 2. By chusing that which is unsuitable to our Case and Constitution, as drinking *Green Tea*, which is diuretick and detergent, when we shou'd chuse Lubricators and Balsamicks, & *vice versa*. 3. By using a wrong Vehicle to extract its Virtues, as vinous or spiritous Liquors instead of Water ^b. Or, 4. By chusing

^b Some infuse *Tea* in Brandy or Wine, the first for a Stomachick, the second for a Diuretick in a Cachexy or Dropsy: I put therefore a Scruple of *Bohea Tea* into a Phial-Glass, and pour'd two Ounces of rectified Spirit of Wine upon it, cork'd it up, and set it two Nights and a Day before a very warm Fire, within a broad Fender, which reflected the Heat upon it: I then pour'd off the Liquor upon a Saucer, and exhaled it; it left five Grains of a greenish-brown transparent Gum, not very Salt, but exceeding astringent and bitter; this put into warm Water, a Part of it dissolved, the Remainder put into Oil, and set before the Fire, another Part dissolved, and made the Liquor of a greenish yellow. I also put a Scruple of *Bohea Tea* into a Phial-Glass with two Ounces of Water, and let it stand before the Fire as long as the other, then strained off the Liquor, and exhaled it. I had five Grains and a

half of a dark brownish transparent Gum, exceeding Salt, but less astringent, and of no delicate Taste; it dissolved in Water, and gave it the Tincture of strong *Bohea Tea*; Copperas made it of a deep blue, almost black; Oyl could not discolour, soften or dissolve it, though set before the Fire, nor would it flame on Iron heated red, or in the Fire, but crackled much. I put also a Scruple of *Bohea Tea* into two Ounces of Spirit of Wine, with four Grains of Salt of Tartar, and set it three Nights and two Days before the Fire; then I poured off and exhaled the Liquor, which was of a dirty dark Colour; there remained four Grains and a half of a dark brown Mucus, brackish, salt and nitrous, but neither astringent nor bitter, being only the Salt of Tartar discolour'd by a little Earth, for the dried Leaves weigh'd nineteen Grains and a half.

Corollary 1. Hence we see, that when

we

chusing an unsuitable Vehicle of the same Kind; as stagnant Water, or that which is impregnated with metallick Particles, or loaded with earthy, which cannot penetrate, nor dissolve and draw out the separable Principles of the Plant. 5. By drinking it to Excess, at unseasonable Times, or of an unsuitable Strength, as too weak when we should astringe, or too strong when we should relax. 6. When by a too frequent and unnecessary Use we have made it too familiar to us, so as 'twill not answer, to that Degree, those Intentions we desire. 7. When due Care is not taken in keeping the *Tea*. Or, 8. When the Water is boiled over a smoaky sulphurous Fire, or boiled too much, and in an open Vessel, or such as gives it a metallick or other Taint. And lastly, 'Tis not to be expected that any Medicine or Diet should always have the same Effect on different Ages, Sexes, Constitutions, &c. It must be of a powerful Nature indeed to give sudden Relief in the Height of a Distemper, or eradicate that which is become habitual by long Continuance. The over-frequent and immoderate Use of *Tea*, as the drinking it three or four Times a Day, and ten or twelve Dishes at a Sitting, as 'tis the common Practice of some, must be so far from preventing or curing Diseases, that 'tis no Wonder to see such look pale, and complain of being low-spirited, the true

we would extract the saline Part of *Tea* chiefly, and less of its Oyl, Water is the proper Menstruum or Vehicle; or if we would extract more of its sulphureous, and less of its saline Parts, rectify'd Spirits are our Liquor; for much of the Gum, extracted by Spirits of Wine, dissolved in Oil, and tinctur'd it, but that drawn by Water did neither. 2. A Vehicle loaded with Salts crisps up and contracts the Leaves to such a Degree, that they scarce emit any of their Principles. The Spirit of Wine with Salt of Tartar got but half a Grain from the Leaf. 3. We see that *Tea* contains no Spirit, since its Tincture neither strikes the olfactory Nerves, nor Tongue, with any volatile Parts, and that whatever Vehicle we use to extract its Tincture, we have the full Weight again in the Gum and dried Leaves. 4. That *Tea* contains a Resin, or exceeding fix'd Oyl, not separable from the Leaf by simple Element, (as will be more fully prov'd below.) 5. That *Tea* contains much light mucous Earth, separable either by an aqueous or spirituous Menstruum. 6. That upon the

Union of this Earth and Oyl depends its Astringency and Bitterness; for the Gum, extracted by the Spirits, was exceedingly more astringent and bitter, than that drawn out by the Water, which had more Salt, but little Oyl.

I infused a Dram of *Bohea Tea* in three sundry, boiling, strong, chalybeat Waters; when the last was poured off, and the *Tea* dried, it had lost only one Scruple. --- The same Quantity, infused the same Time, in as many boiling (Pipe) Waters, lost twenty five Grains. --- A Dram of *Green Tea*, infused as long in as many boiling (Pipe) Waters, lost only twenty three Grains and a half. --- A Dram of *Bohea* infus'd in three boiling Waters, taken from a Pump, lost twenty three Grains. --- The same Quantity, infused as above, in clear River Water, (taken up ten Days after any Floods, or great Rains had fallen) lost twenty six Grains; *Green Tea* lost only twenty four and a half. --- A Dram of *Bohea* thus infused in Rain Water (gather'd in a Pewter Dish in a Garden) lost twenty six Grains and a half.

true Effects of a lax Fibre, and serous Blood, occasioned by swelling down so much warm Water, and they are certainly obliged to the *Tea* that they are no worse. But 'tis needless to spend more Time or Pains in vindicating this Liquor from the gross Abuses and Mistakes of its Enemies, in which it only shares a common Fate with many other Things that are excellent and valuable in their own Nature.

One great Reason of the different Sentiments we meet with concerning this foreign Leaf, I apprehend to be this, that tho' several Authors have wrote upon it, yet they have not made a due Enquiry into its Virtues and Properties, but rather taken them upon Trust, than examin'd the Truth of what they affirm or deny, by a sufficient Number of Experiments and Observations; which would give them some satisfactory Light into its Principles, and enable them to account rationally for its various surprising Effects.

The Reason of these different Opinions.

William Ten-Rhyme (formerly Botanist and Chymist to the Emperor of *Japan*, and afterwards Professor of Botany and Anatomy at *Batavia* in the *East-Indies*) in his *Japanick* Observations, says, *Tea* purifies the Blood, drives away frightful Dreams, dispels malignant Vapours from the Brain, mitigates Dizziness, Pain of the Head, is good in Dropsies, dries up Rheums in the Eyes, corrects the Acrimony of the Humours, opens Obstructions of the Bowels, restores the Sight, temperates dry Humours, cures a hot Liver, mollifies a hardened Spleen, restrains Sleep, makes the Body lively, and expels Drowsiness, cheers the Heart and drives away Fear, appeases the Gripings and Wind in the Guts and Womb, corroborates the *Viscera*, strengthens the Memory, sharpens the Wit, temperates the Bile, is excellent in the Stone and Gravel, and lastly, promotes kind Correspondence between both Sexes: But he attempts not to give any rational Account *why* we may expect such extraordinary Benefits from it, or what Constitutions and Countries 'tis most agreeable to; and 'tis strange he should reckon it such a Catholick Medicine in Dropsies, malignant Vapours, Gripes, Flatulency and relaxed *Viscera*, since Experience seems so plainly to contradict him.

Ten-Rhyme's ill Account of *Tea*.

Pechlin says, we may receive as much Benefit from several of our own Vegetables, as from *Tea*; and is very lavish in his Praises of *Veronica* and *Pauls Betony*. However, he gives it a great Character, but after all seems at a Loss whether to ascribe the good Effects to the Water or the *Tea*, and is rather inclined to the former, because 'tis so great a Diluter and Expeller of the Animal Salts; wherefore he concludes, that many of our own Vegetables are possess'd of equal Virtues with *Tea*, that is in plain *English*, none of them have any, or more Virtues than what they receive from the Water.

Pechlin's improper Substitutions.

Rejected by
Kempfer
without any
Reason.

Kempfer denies that either *Veronica*, or any other substitute domestic Vegetable, deserves to come in Competition with this excellent Exotic; nor, says he, is there any Plant yet known in the World, whose Infusion or Decoction taken so plentifully as that of *Tea*, sits so easily upon the Stomach, or passes quicker through the Body, or so gently refreshes the drooping animal Spirits, and recreates the Mind. But as true again we know no Vegetable in the World, whose Infusion is drunk so plentifully, and therefore cannot certainly say what their Effects would or would not be. And though an excessive Quantity of *Tea* may pass off with more Ease, in a less given Time, in warm Countries, whose Inhabitants are under a Necessity to drink proportionable to their great Perspiration, yet this is no Precedent for the Inhabitants of a cold Climate to follow, whose insensible Evacuation is less, and their sensible greater and more considerable: Nor are they under the like Necessity to swallow down such immoderate Quantities, except their Perspiration is diminished by a Load of viscid Juices, thrown upon the cuticular Strainers; in this Case, after bleeding, I don't see what they can do better, than confine themselves to a warm Room, use a spare Diet, and drink freely of small *Green*, or *Sage-Tea* to dilute the Blood, that it may pass the secretory Ducts of the Skin.

Cleyerus is
mistaken.

Andrew Cleyerus was positive that we had the *Tea-Shrub* in *Europe*, till he went to *Japan*, when he gave up his Pretensions, and tells us quite another Story^d.

The Principles of Vegetables.

Though all Vegetables contain, or consist of the same Principles of Air^e, Phlegm^f, Salt^g, Oil^h, and Earthⁱ; yet the Modification and Propor-

^d *Ea quondam Opinione fui, ut impossibile judicaverim, Vegetabile hoc in Europa non inveniri; nunc tamen diversam plane foveo Sententiam, & quod quævis Tellus sua proferat; vidi enim in Japania Rosas centifolias colore elegantissimas, rubras, purpureas, candidas, in altis Arboribus, Mense Januario, Aere adhuc frigido, enatas, Odore tamen carentes; ut & variorum Generum Lilia fruticibus lignosis enata, nec non Pæonias flore egregie plenas, Arborecentes, quales in Europa nunquam conspexi. ----- Arbores insuper, ubi Cerasos conspexi, Flores Solis, foliorum loco etiam in Februario, frigore adhuc sæviente, nullum vero Fructum ferentes.* Miscel. curios. Dec. 2. An. 4^{ti}. p. 7.

^e Every Plant is provided with a double Series of Vessels, one Juice containing

Tubes, and the other trachæal Canals, which contain, receive, and let out Air, which Air, when rarified, expands its containing Vessels, whereby the other are compress'd: And as the Atmosphere is rarified or compress'd, so these Aerial Vessels are expanded and contracted, whereby the Circulation of the vegetable Juices are accelerated or retarded; so that the Dilatation or Contraction of those Vessels in Vegetables, is the same Thing, or act the same Part in them, as the *Systole* and *Diastole* of the Heart in Animals. Now as Herbs are never so fully dried, but a great Heat or actual Fire will discover some Phlegm in them; so Air, being a more elastick Fluid than Water, it will expand it self more, and extend

Proportion thereof, (upon which their Effects on animal Bodies depend) is not only different in the various vegetable Classes, but each different Plant

tend the Vessels, as the Juices exhale, till the Leaf is crisped up and dried, and then it keeps its Compass, and bears some Proportion still in the Bulk of the Plant, tho' little in its Weight.

^f Phlegm, or Water, is the common Diluter of all solid Bodies; and the more any Plant contains of this, the more languid are its other Principles. The Leaves of Plants abound most with this when they first put out and begin to spread; then they exude a clear Water, mixed with a dissolvable acid Salt, and as Leaves nearest the Ground are largest, they are filled with more Phlegm and acid Salt, because they contain so much more earthy Parts in them. The highest Leaves of any aromack Plant are the smallest, and smell strongest, and the Scent is weaker all the Way to the Bottom; as the Leaf increases and grows larger. So when a Tree, Shrub or Plant is set either too deep in the Earth, or in a wet marshy Ground, too near Water, or in a Grove where 'tis shaded by other Trees, which diminish its Perspiration by the Leaves, it must have greater Plenty of crude Juices or Water, which will expand and stretch out the Vessels of the Leaves to an extraordinary Degree, cause a greater Dilatation of the other Principles, and the slower Inspissation of the glutinous Juices, which are the Materials of Production; and where this happens, the Fruit will be little or none at all. On the contrary, where Trees have less Moisture, the other Principles are less diluted, lie nearer together, and are sooner inspissated into a convenient Substance, and their Fruit will be better and sooner ripe. Hence dry, sandy, gravelly Ground bears the most, best, and earliest Fruit; for the same Reason the Fruit on the Tops of Trees is sooner ripe than that on the lower Branches. The Reason why Phlegm and acid Salts abound more in Vegetables in the Spring, than in the Summer Season, is because of the

Weakness of the Sun's Heat at that Time, which, in the Summer, acts like a constant but slow burning Glass upon the Earth, whereby its Surface is rarified, its Salts, Oyl, and Spirits dissolved, and ascend the vegetable Vessels in much greater Store.

^g Salt has certainly the best Title to a Principle of all others; 'tis that which strikes the Tongue with a peculiar Pungency, that gives Solidity to Bodies, and yet is dissolvable in Water. There are three Sorts of Salts, viz. lixivious, volatile and essential; the first is extracted from Plants by Calcination, and is not to be found in Animals, being there changed into a Volatile from the Attrition and Action of their Vessels and Muscles. Volatile Salts are those in ardent Spirits, drawn from Vegetables after Fermentation. The Essential are procur'd from the express'd Juices of Plants, putrify'd, and set in a Cellar to crystallize.

^h Oil, or Sulphur, is very soft and unctuous, its Parts being entangled with one another, cement and keep together the other Principles; and of this there are several Sortments, according to its more or less Fluidity; Tenacity and Quantity; and yet 'tis but a Compound, or particular Modification of the other Principles; for all Oils, whether fine or coarse, volatile or fixed, are reducible to a light spongy Earth, Salt and Phlegm.

ⁱ Earth can neither be destroyed by Fire, nor dissolved in Water. There are who make Spirits a fifth Principle, and indeed some Vegetables have Spirits; these are the most subtle and minute Parts of Bodies, which rise first in Distillation, or exhale in the open Air, when easily separable from the other Principles which embarrass and shut them in. Spirits are accounted active Particles only in Respect of the Propensity and Facility of their Motion, in Comparison of the more gross and bulky Parts being equally destitute

Plant of the same Class, has somewhat peculiar to it self^k, distinguishing it from others of the same kind; and that not only as to its Growth and outward Appearance, but as to the Phenomena producible by several Experiments. This Variety depends on the different Rangement of those Principles in different Plants. And our little Acquaintance with this particular Modification of each Herb, has made us more obliged to Chance and Empiricism, than to Philosophy, for what best deserve the Name of specifick Medicines. But when Reasoning is added to the fortuitous Effects of new Simples, it directs us in the Use and Application of them with Safety and Advantage to the Sick; and enables us to discover the Time and Manner of administering them in each proper Case, Constitution, Age, Season and Climate. It was doubtless Chance, and not Reason, that first let *Paracelsus* into the pacifick Effects of the internal Use of *Opium*: And the missionary Jesuit into the Knowledge of the Astringency and febrifuge Virtue of the *Peruvian Bark*. But then 'twas Reason, and not Chance, which taught their Successors, why Opiates are dangerous, and often mortal, in an over-rarified State of the Blood, in a chronick Laxness of the Solids, or in Gangrenes and Mortifications, &c. and

of a self-moving Power with other Bodies. Spirits drawn from Vegetables, are only a fine Oil, mix'd with a small Portion of Phlegm. Those extracted from Animals are very minute Salts swimming in Phlegm. And those which Fossils afford are acid Salts fused by Fire, and floating in Phlegm.

^k The Principles of all the Parts of the same Plant are not always alike, for Copperas turned *Tea* made of Horse-radish Leaves to a deep green Colour, *Sal Martis* to a yellowish green, Spirit of *Sal Armoniac* to a yellowish Colour, like decayed Tincture of Saffron, Galls alter'd it not from clear; but *Tea* made of the Roots, was turned to a light Purple by Galls, when neither Copperas, *Sal Martis*, nor Spirit of *Sal Armoniac* could alter its Colour, or tinge it in the least; but this *Tea* with Galls, turned the first to a beautiful Purple. Hence we see, that this Plant contains most of its volatile Salt in the Root, and the least Oil there, and most of its Sulphur in the Leaf, where there is least Salt. And 'tis common for all Roots, Trunks and Stalks to contain

more Acid, and Leaves, Flowers and Seeds, on the contrary, less of this, and more Oil, which they emit sooner, more freely, and with less Labour than the other Parts. 1. Because they are more exposed to the Rarefaction and Volatilization of the Heat of the Sun, than the Root. 2. Because the watry Parts sent up into the Leaves and Flowers, are less, finer, and better disposed for Nutrition and Circulation. 3. The Acid in the Root fixes the other Principles, so as to make them of more difficult Extraction. But neither is the Root stored with so much Acid as to cause a visible Fermentation with Aleali's; nor is any Herb, Leaf or Flower possess'd of so much Alkali, as may cause a manifest Fermentation with Acids. I have made many Experiments in order to be satisfy'd of the Truth of this; and find that Vegetables contain an essential Salt, neither sensibly Acid nor Alkaline by any intestine Motion discernible upon their Mixture; tho' the Taste discovers an Acidity in the Buds of Plants in the Spring.

and the *Cortex* improper, when Intermittents are attended with great Dropsies, abdominal Schirrus's, or inward Impoſthumations, &c. But having confin'd my ſelf to ſome Tryals on the Leaf of an *Oriental* Shrub, I ſhall not expatiate upon theſe, but ſee what Discoveries I can gain on this Subject, and lay them down as a Specimen of what may be done on others, for the Benefit of Mankind.

Bountiful Nature has provided us very liberally with domeſtick Vegetables, ſerviceable in a great Variety of Caſes, and left us to make a judicious Choice and Application of them to their proper and particular Intentions. Wherefore ſome eminent Authors have ſtrenuously argu'd, that we may reap as much Advantage from ſeveral Plants of our own Growth, as from this exotick Leaf. But the Queſtion lies not here, Whether we have not as good, nay better Specificks, (if I may be allow'd the Term for once) in many Caſes, than *Tea*; for all muſt own, that Camomile Flowers are a better Febrifuge and Carminative; the Fibres of black Hellebore Root a better Attenuator of the Blood in plethorick Conſtitutions, Penny-Royal and Hore-hound more efficacious inciding Pectorals, &c. But the Queſtion is, either 1. Whether we have any one domeſtick Plant, whoſe general and diatetick Uſe is equally beneficial with that of *Tea*. Or 2. Whether we have any domeſtick, or even *European* Plant, whoſe Principles are in the like Proportion, or combin'd and modify'd after the ſame Manner^l, and conſequently capable of producing the ſame Effects, which will be difficult for thoſe to prove, who ſeem forward to aſſert it^m: And even *Veronica* it ſelf will not be found upon

^l To ſatisfy my ſelf herein, I made Tryal of ſome out of all the chief medicinal Claſſes of Vegetables; as out of the Cardiacks and Cephalicks, I took Betony, Sage, Thyme, Lavender Flowers and Marjoram: Of the Diaphoretick's; Baum, Scordium and Saffron: Of the Vulneraries; Agrimony, St. John's Wort, Horehound, Ground-Ivy, and Roots of *Solomon's Seal*: Of Carminatives; Camomile Flowers, and Angelica Roots: Of Emmenagogues and Hyſtericks; Savine and Mother-wort: Of Aſtringents; Galls, red Roſes, Tormentil Roots, Oak Leaves, and Pomgranate Peel: Of Stomachick's, *Cardus benedictus*, leſſer Centaury, and Gentian: Of Baſamick's; Mallow, Roots of *Althea* and *Aaron*: Of Reſtoratives or Pectorals; Colts-foot, Maiden-hair, and

Hinds-tongue: Of Detergents; *Veronica*, Savory, Vervain and Pimpernel: Of Diureticks, Horſe-radish and Salary Roots: Of Coolers, Dandelion and Bugloſs: Of Abſorbients, Saffaſras: Of Narcoticks, *Cocculi Indici*: (becauſe being Winter Seaſon, I could have no Hemlock, *Solanum*, or Poppy Leaves.) But after Experiments made on all theſe, I found none of them bear any near Reſemblance to *Tea*, either in Taſte or Colour; thoſe of the vulnerary and aſtringent Tribes ſeem'd to offer faireſt for it, yet they all widely differ'd in their *Phænomena* from it.

^m Though Copperas turns the Infuſion of Agrimony into a pale Blue, and that of Oak-Leaves into a very light Sky Blue, as far exceeding that of *Tea* as the other falls ſhort of it; yet the one is much leſs

upon Tryal justly entitled to the high Encomiums wherein they give it the Preference to *Tea*ⁿ.

Tea,

Astringent, and both vastly inferior to *Tea* for a fine delicate Flavour and Taste. The Infusion of Bramble Leaves seem'd to promise something more than either of these; but instead of a bitter astringent Taste, had something like that of Liquorice and Ground-Ivy.

ⁿ *Pechlin* is very profuse in his Commendations of *Veronica*: He says, "It gives
" a good tolerable Tincture; and though
" the Taste be not bitter, yet it's ex-
" tremely Astringent; and not only so,
" but it turns black like *Tea* when mix'd
" with a Solution of Vitriol, or Coppe-
" ras; neither does it come far short of
" it in its Effects, since it cleanses the
" Reins, and very much strengthens the
" Head and Stomach. It abounds with
" a brisk volatile Salt, which is very a-
" greeable to our Northern Constitutions,
" whose Blood is naturally sluggish and
" heavy; and it also carries with it a fine
" thin Oil, so admirably well tempered,
" that as this hinders the Spirits from
" evaporating, so these correct the In-
" flammability of this, from whence re-
" sults a very agreeable bitter Astringent." He has here forgot himself, having told us but a little before, 'twas astringent, but not bitter. "All these together, as
" he goes on, as they rectify the Fer-
" ment of the Blood, and at the same
" Time strengthen and confirm the Tone
" of the Parts, contribute so much to
" the Assistance of Nature in its Opera-
" tions, as to prevent, if not cure, most
" chronical Distempers." — I tried
several Times the Infusions of *Tea* and *Veronica* with Copperas, but could never find his Experiments hold good, except they were made by Candle-light, and then indeed they appeared pretty near the same. I took *Bohea*, *Green Tea*, and dried *Veronica* Leaves, of each a Scruple, put them separately into three *Tea* Pots, and pour'd a Cup-full of boiling Water upon each of them: When they had stood seven or

eight Minutes, I pour'd off the Liquor into three different *Tea* Cups, upon a Grain of Copperas, or green Vitriol: The *Bohea Tea* was first of a deep blue, but presently follow'd a Precipitation of much black *Mucus*, above which stood a clear Liquor: The *Green Tea* was of a much lighter blue, its Precipitation was neither so sudden, nor great, being of a bluish black Colour, the Liquor above was still of a blue Tincture. The *Veronica Tea* was of a disagreeable dark *Green*. And trying them again in three other Cups, Spirit of Hartshorn turned *Bohea Tea* to a deep reddish brown, like fresh drawn Tincture of Saffron; *Green Tea* to a deep greenish yellow; and changed *Veronica Tea* to a yellowish brown, like decayed Tincture of Saffron: The Clouds, raised in the *Green* and *Bohea Tea* by this Spirit, were surprizingly beautiful: After they had stood four or five Hours, Galls turned the *Bohea* of a reddish green, and made the *Green Tea* clear, having a Powder of a whitish Colour at the Bottom; and the *Veronica Tea* was changed to a clear brownish Colour. When the *Bohea Tea*, with Spirit of Hartshorn and Copperas were mix'd together, it precipitated much grey Powder, with a clear Liquor at Top, somewhat of the same Die, having a beautiful variegated thin Pellicle on its Surface: The *Green Tea*, with Copperas and Spirit of Hartshorn, was of a purple Colour precipitated, much cover'd with a stronger and more beautiful Pellicle than the former; *Veronica Tea* thus mix'd, let fall a greenish Powder, the Liquor was somewhat of a dark brown, and had a very small Pellicle. — Spirit of *Sal Armoniac* put to these *Teas*, wherein was the powder'd Gall, made *Bohea* of a deep yellowish brown, *Green Tea* of a light yellowish brown, and *Veronica* of a greenish yellow. — *Bohea Tea*, with Galls and Copperas, was of a whitish blue, *Green Tea* very much the same, and *Veronica*

ronica

ronica Tea of a blackish green. --- *Bohea*, with Galls, Copperas, and Spirit of *Sal Armoniac*, was of a reddish black Colour; *Green Tea* the same, and *Veronica* of a greenish black, and all very thick; but any of the acid Spirits clear'd them all again.

N. B. A Grain of Copperas, half a Grain of Galls, twelve Drops of the alkaline Spirits were sufficient for each of these Experiments, which were made in very clear Weather in *November*; I used only Pipe Water, and the *Tea* Cups were clean wash'd after every Experiment. 2. The Clouds in the *Green* and *Bohea Tea*, after they had stood some Hours with Spirit of Hartshorn, were Semicircular, with their Convex Sides towards the Circumference of the Cup, and their Concave facing the Centre, one inclosed within another. I once observ'd that instead of Semicircles, in *Green Tea*, there were straight Lines from the Sides of the Cup, as from the Circumference of a Circle to its Centre. 3. When *Betony Tea* had stood about two Hours, after the Spirits were dropt into it, and stirr'd about with a Fork (which had been us'd before in stirring *Tea* with Copperas in it) the Stalks of *Betony*, at its full Growth, without Leaves or Flowers, stood out from one Side of the Cup, as from the Root, and reached to the other; *Baum* and *Winter Savory Tea* did the same, when the Spirits were dropp'd into them, and stirr'd with a Fork taken immediately out of the Solution of Copperas in the same Infusions: But I tried these several Times after, and could never meet with this *Phænomenon* again. 4. When *Green Tea* with Spirit of Hartshorn and Copperas, had stood over Night, I found a fine Pellicle of red, blue, and yellow Colours at Top, which I scum'd off, but could neither make it incorporate with Water, nor its own Liquor again, being chiefly Oil, stripp'd of its Salts, and disentangled from its earthy Particles, by the Water. Fine Salt of *Tea*, (procur'd by Calcination, Filtration, or Exhalation by a gentle Heat) when view'd through a Microscope, in a straight Line from the Eye to the Sun,

appeared of the same beautiful variegated Colours, as the Pellicle on the Surface of the Liquor: But view'd in any other Light, was clear and transparent as Crystal, consisting of very small Particles, and these not much pointed. --- But finding, that in all my Experiments on about seventy Vegetables, the Colours produced by Copperas, Galls, Spirit of Hartshorn, Sal Volatile, Spirit of Sal Armoniac, Sal Martis, Spirit of Vitriol, &c. were still different; and upon a Repetition of them on the same Vegetables, they were the same again, I thought it necessary in the next Place, to enquire into the Reason of it. And shall now Present my Readers with a few such Tryals as are proper to illustrate our present Subject *Tea*.

I took four *Tea* Cups, and pour'd two spoonfuls of warm Water into each of them; in the first I put three Grains of Copperas, upon which it seem'd to send out several greenish Rays, but when the Vitriol was quite dissolved, the Liquor was the same in all Respects as before: Into the second Cup I put a Grain of powder'd Gall, which fell to the Bottom, and alter'd not the Colour of the Water in the least: Into the third, I put twenty Drops of Spirit of Hartshorn, but neither did this discolour the Water: Into the fourth, four Grains of Salt of Tartar, which made the Water somewhat whitish, but it continued clear. --- These Waters, with Copperas and Gall, being mix'd, they immediately became black, and precipitated much Sediment. Sal Volatile dropp'd into the Water with Copperas, caused instantly a curled Sediment to subside; the Mixture was of a deep green Colour, and had a delicate Pellicle on its Surface. Spirit of Hartshorn, or Salt of Tartar, quickly made it *Green* again, and caused a fermenting Heat.

Corollary 1. Seeing neither Acids nor Alkali's, fix'd or volatile, affected or changed the Water, therefore simple Element partakes so little of either sort of Salts or Fossils, that they are insensible and invisible, and consequently 'tis an admirable Diluter of any Acrimony which may abound in the animal Body, since

it

it defies to associate with these. *Cor. 2.* From Copperas and Galls turning the Water black, we learn that Copperas contains much acid Salt, wrapp'd up in a ferruginous Earth, for Galls do the same with chalybeate Waters: And that Galls contain much alkaline Matter, seeing their Mixture with Copperas occasions a Precipitation in the Liquor. *Cor. 3.* From acid Spirits taking up the Precipitation, we see, 1. The attractive Force of Acids, whereby they inclose the Particles of Bodies on all sides; especially of Metals, raise and separate them from one another, till they dissolve them into such minute Particles as are invisible, *i. e.* they render the Liquor transparent, and free from Precipitation. 2. From this we see, that Acids consist of small solid Particles, less than those of Earth, but very sharp and piercing. 3. That Alkalines are Corpuscles larger than the former, globular and very porous, and are chiefly constituted of Earth, united with some acid Particles. 4. Since these Salts consist of a very different Figure and Size, and we have yet no other Terms of expressing this Difference, then to condemn these, when their meaning is fix'd, and universally known (tho' they convey no definite Idea of the thing express'd) is to quarrel merely for the sake of Words.

All Salts, whether Vegetable, Animal or Fossil, differ in no other Respects but these, of their Bulk, Figure, Composition, and different Degrees of Attraction, some being so small as to become Volatile; others more coarse and gross; some globular and smooth, others sharp and poignant; whereby they either stimulate the Fibres, or corrode and dissolve them: Some of the Vegetable Salts are strongly attach'd to the Earth of the Plant; others are hid in its Oil and Sulphur, and some watry Plants have their Salts cover'd with an earthy Mucus, which prevents their sensible Effects upon our Bodies. *Cor. 4.* The Cause of the Fermentation, Heat, Foaming and Smoaking of the Tea or Water, with Salt of Tartar and acid Spirits, is the Particles of the Acid furiously rushing upon the Particles

of the lixivious Salts, which excites such an intestine Motion in the Liquor, as raises a sensible Heat: At the same time it strikes with such Force against the coarser Particles, that returning the Collision, they are broken in Pieces, and either turn to Air, or send forth their imprison'd Particles of Air, which being specifically lighter than Water, rise up in Bubbles to its Surface.

I boiled half an Ounce of powder'd roll Brimstone in a Pint of Water to three Quarters of a Pint, and took two Spoonfuls of this Liquor after it was settled, but something warm, to which I put a Grain of Copperas; 'twas soon dissolved, but the Water continued clear: To other two Spoonfuls of this Liquor, I put a Grain of powder'd Gall, which presently chang'd it to a weak Purple Colour. These two mix'd together, made a charming light Blue, but presently a Precipitation follow'd, and left a transparent bluish Liquor at Top: Spirit of Hartshorn alter'd not the Colour at all, but Copperas thrown into it, after this, turned it of a light Green, with a whitish Blue Cast in the middle of its Surface, and let fall a Precipitation: Spirit of Hartshorn, dropped into the Cup wherein was the Gall, turned the Liquor of a reddish Brown, without any Precipitation: A little Copperas put to them, made the whole of a brownish Black, and had a strong Pellicle on its Surface; it caused a Precipitation much larger than the Quantity of all the three Ingredients put into the Liquor. From this Paragraph we learn,

Corollary 1. Seeing Copperas alter'd not the Colour of the Decoction of Brimstone, therefore this Sulphur, besides its Oil, contains more of an acid Salt than Earth, so as the Acid of the Vitriol and Sulphur, not having an Alkaline to act upon the Water, still continu'd transparent. *Cor. 2.* Where the Alkali, or light porous neutral Earth in a Mixture, is superior to a real and sensible Acid, there a Precipitation follows, but, *vice versa*, when the Acid is manifestly greater than the Alkali, the Strength of the former clears and dissolves the latter: Thus Tea with Galls,

Galls, mix'd with a Solution of Copperas, produced a Sediment, but the acid Spirits quickly dissipated and dissolved it.

I made a thick Liniment of Salt of Tartar, and Oil of Olive, and took a Scruple of this, one Grain of Galls, and three Grains of Copperas, upon which I pour'd a *Tea* cup full of boiling Water: This Mixture was first of a reddish Brown, then of a deep blackish Blue, with a dirty foaming brown Pellicle on its Surface, and a large Sediment. --- Then I put two Grains of Copperas to six Grains of the Liniment, and pour'd two Spoonfuls of boiling Water on them, which turned of a light blue Colour, threw up a gross Pellicle, and let fall a Sediment as in *Tea*. --- I mix'd one Grain of powder'd Gall, with four Grains of the Liniment, and pour'd boiling Water on them: The Mixture was first brown, and then greenish. --- I put the clear Liquor of this to the clear Liquor upon the Copperas, which produced a deep reddish Colour. It was the same in all Respects, when I us'd *Green Tea* instead of Water; for a little of the Liniment put into *Tea*, made it thick and whitish, so it did Water: Copperas caus'd it to precipitate in *Tea*, and so it did in Water; it was first reddish, but quickly turn'd to a light or whitish Blue, with a thick white Pellicle at top: Water did the like; so that using *Green Tea*, instead of Water, was only adding so much more Oil and Salt: Salt of Tartar alone produced the same *Phænomena* as the Liniment. Now as Salt of Tartar, whether it be made by calcining it in a Crucible, or wrapping it in a Paper, and burning it in an open Fire, after all Purification liquifies again, and turns to Oil, if the Air has free Access to it. This Corollary arises hence, That Oils, whether fine or coarse, fixed or volatile, consist of, and are reducible to, a spongy Earth, Salt and Phlegm; so that Oil cannot, with any tolerable Propriety or Strictness, be call'd a Principle, but a special Modification or Composition of the former.

But in order to be satisfy'd on what

Principle or Principles these *Phænomena* of *Tea* depend; I took two Drams of *Green Tea*, and pour'd several times boiling Pipe Water upon it, till the Liquor was not only clear and insipid, but till Copperas would give it no Tincture; then I burnt the Leaves to white Ashes, and threw them into the *Tea*, boiled it on a slow Fire till the whole Humidity was evaporated; but when the Water was almost spent, there rose up a very thick blue Smoak, which was the Oil: A little of this Extract, mix'd with a Solution of Copperas in Water, made the Liquor exceeding blue. The Smoak being gone, and nothing but dry *Fæces* remaining, (which were the Earth and Salt) I took them from the Fire, pour'd Water on them, and stir'd them well about, and then put three Grains of Copperas into a little of this Liquor, but no Change or Alteration of Colour follow'd upon it; so that these *Phænomena* depended not on a Mixture of the Salt and Earth; then I filter'd the rest of the Liquor, and put a little Powder of Gall into one Part, and some Copperas into another; but these alter'd not the Colour; this Variety therefore depends not on the Salt. Then I took some of the Earth mixed in Water, and added Copperas to it, but no Change follow'd, so that the Earth was no principal Agent in these *Phænomena*. Hence 'tis plain they depended on the Oil or Sulphur, and therefore this being separated from the rest, no Variety of Colours were to be expected. --- This is further demonstrable from Copperas and Galls, turning the Water with the forementioned Liniment of a light Blue. By this Course we are not only taught the Principle which occasions these pleasing Changes of Colour, but its Texture also; for both Sulphur and Sal Volatile, contain a most subtile Oil, in great Plenty; and the Reason why 'tis volatile in them, and not in *Tea*, though it bears a near Resemblance to them, is, because that of *Tea* is more firmly attached and cemented to the earthy Particles, as we shall see from other Experiments in the next Section.

I could likewise give the Reasons why
Copperas

The Principles of *Tea*.

Tea, as imported to us, contains some little Phlegm, (but more volatile Salts) which it had either retained in the roasting, or imbibed from the Air afterwards. All kinds of *Bohea* have naturally more of this than the *Green*, because 'tis pluck'd while this Principle exceeds its due Proportion, *viz.* before the Salt, Oil and Earth have been sufficiently dissolv'd and rarified by the subterranean and aerial Heat, and prepared to rise up into the Plant, in due Quantity with the Phlegm. As the Leaf grows, its watry Principles lessen, and its oily ones increase; for the first Juice, this Plant draws in plentifully from the Earth, is a gross, acid, saline Matter, of which *Bohea Tea* exudes more in roasting than *Green*. The Reason why the Oil increases is this, the tracheal Vessels being expanded by the rarified Air, compress the Juice conveying Tubes, and as these are driven into smaller Diameters, and are more agitated, they either expel their finer watry Juices thro' their perspiratory Ducts of the Leaves, or return them to the Earth, but the more cohesive or entangled Parts, becoming thicker, are strained off, and propelled into small lateral Bags, appointed to receive the oily Part of the Plant. But if the Herb contain Salt or Oil, of more subtle, minute, or separable Parts, than the Water; or if they are more attracted by the Water than by one another, and the Pores as favourable for the Filtration of them, then they go off together with the Phlegm. For this Reason the aromattick Plants yield the most odoriferous Smell in a dry hot Season, after a warm Shower, which relaxes their parched Fibres.

This Oil of *Tea* is of sundry Sortments, one Part of it being so loose that it exhales, if either the Leaf be exposed to the open Air, or put up in Paper, or any spongy Vessel^o; for which Reason 'tis sent to us in Tin Canisters. Another Part is drawn off by Infusion in cold Water p.

A third

Copperas, Galls, Sal Martis, &c. make the Infusion of one Vegetable blue, of another yellow, of a third green, of a fourth black, &c. which is more, and gives a truer Account of the Proportions and Modifications of Principles in Plants, than Chymistry has yet done, as far as I know: But this would protract the present Discourse vastly beyond its intended Brevity.

^o I weigh'd a Dram of *Green*, and a Dram of *Bohea Tea*, spread each upon a Saucer, which I set before a small Fire within the Fender a quarter of an Hour; tho' both had the same Degree of Heat; yet when I weigh'd them again, the first

had lost two Grains, *i. e.* one thirtieth part, the last had evaporated six Grains, *i. e.* one tenth part of the Weight.

^p I infused two Drams of *Green Tea* 24 Hours in a Pint of Pipe Water cold, then pour'd off the Water, and dried the *Tea*, and then weighing it, found it had lost 32 Grains; during that Infusion, the dried Leaf was something blacker than before, but recover'd its former Curl. --- Two Drams of *Imperial Tea*, infused 24 Hours in a Pint of cold Pipe Water, when the Leaf was dried again, had lost 30 Grains, *i. e.* one fourth part. --- The same Quantity of *Bohea* thus infused, lost 31 Grains.

A third Part is extracted by boiling Water^q. A fourth is not to be moved by Infusion; but requires a strong Decoction to fetch it out^r. A fifth sort is not to be drawn off by an aqueous Vehicle, but must have rectified Spirits to extract it^s: And the last Part is only separable by an open

^q Two Drams of *Imperial Tea*, infused two Hours and a half in three sundry boiling Waters after it was dried, had lost thirty four Grains: When this *Imperial Tea*, and that which had been infused in cold Water, had lain two Days after they were dried, the first was ten Grains lighter than the latter, its Leaves were also black, and had lost their Curl, which they never recover'd, but the other scarce lost either Curl or Colour. --- I pour'd a Pint of boiling Water on that *Green Tea*, which was infused in cold Water before, and dried again, and let it stand an Hour; the Liquor when pour'd off, was little short either of its Astringency or Tincture, but destitute of its fine Flavour: The Leaf dried again and weighed, had lost sixteen Grains more, that is, forty eight in all. --- Two Drams of *Green Tea* infused in four several boiling Waters, each of which stood on half an Hour, the last when pour'd off was clear, and had little Taste; then I dried the Leaf before the Fire, and found it had lost forty six Grains. -- Two Drams of *Bohea*, infused as the last in all Respects, and dried, had lost forty eight Grains. --- One hundred and twelve Grains of *Hysson Tea* infused three quarters of an Hour in boiling Water, lost forty two Grains, which is above a third part. --- Of those *Teas* that had been thus infused, I took five Scruples and twelve Grains, pour'd a Pint of boiling Water on them, and let them stand twenty four Hours, then chang'd the Water, and let it stand on as long a second Time, and repeated it twice more; Copperas still tinctur'd the Liquor of a light blue, till it came first to a weak purple, and then clear; I took out the Leaves and dried them, and found they had lost only nine Grains, for one hundred and three remain'd.

^r I took the last hundred and three Grains, and boiled them in a Pint and a half of Water to half a Pint, which strained off, tasted more astringent than the third Infusion of *Tea* ordinarily does, but not bitter, nor had it any fine Flavour: Copperas made it of a beautiful blue, but it neither deposited so much Sediment, nor was the Liquor at Top so clear as in the first Infusion: I gave it six Decoctions more; the fourth was blue with a purple Cast, the fifth more inclined to a purple, the seventh was perfectly clear; in all these Decoctions the Sediment still decreased with the Colour, but more of this presently.

^s After I had first infused *Pekoe Tea*, and boiled it as above, and dried it, I put twenty two Grains into an Ounce and a half of rectified Spirit of Wine in a Phial Glass, and set it before a hot Fire ten Hours: It tinctur'd the Spirit of a deep green; the Liquor being pour'd off, and the *Tea* dried, it had lost two Grains and a half. --- I took also one Dram and twelve Grains of *Bohea*, (that had been infused in six or seven boiling Waters sixteen Hours, and boiled in as many more the next Day, and then dried) which I put into a Phial Glass with two Ounces and a half of rectified Spirits, setting it three Days before the Fire: The Spirits were tinctur'd of a deep beautiful green, tho' they appeared black thro' the Glass: These pour'd off, I put on fresh Spirits; which in two Days were tinctured of a light green, and the Leaves were so crisped as to powder in the Hand: When they were thoroughly dried, they had lost seven Grains and a half: I exhaled the Spirit, and had seven Grains of Gum. On this Gum I poured fresh Spirits, and set it on fire till the Spirits were burnt, expecting the Flame would consume the Oil together

open Fire^t, so that the Oil of *Tea* is a semi-balsamick Liquor, consisting of Mucus, or light small separable Earth and Oil, which constitutes a Gum^u, partly dissolved in Water^x, and partly inflammable with the Fire^y. The whole is very thick, black, strong and astringent. Hence then,

ther with the Spirits; but it left the Gum entire and very moist, and before the Fire it dissolved more.

^t I put two Drams of *Tea*, (after it had been infused and boil'd in Water, and had its Resin extracted by Spirits of Wine) into a Crucible, set it in a good clear Fire, and cover'd it with an Iron Plate fitted to it; but the Rarefaction of the heated Air obliged me presently to take this off, to save the Crucible from bursting to pieces. The *Tea* first sent up a very thick blue Smoak, and then taking fire, gave a great clear Flame; a deal of black tough Oil hung upon the lower Side of the Plate, which tasted exceeding rough and bitter. I tried the same on other *Tea*, and found the same Effects.

^u I took four Scruples of *Hysson Tea*, which I divided into two equal Parts, and put into two Phials, then pouring two Ounces of Spirits of Wine on each, I set the one before a warm Fire five Days, (*N. B.* In all these Experiments before the Fire, the Glasses were set at a Foot and a half Distance from the Bars of a small Stove, within a broad Fender, which overtopp'd the Phials, and reflected the Heat upon them,) and then removed it into a Window in the same Room, where it stood seven Days more. The other Phial I set in a cold Room, which had no Fire in it, and let it stand thirteen or fourteen Days. I did the like with four Scruples of *Green Tea*, and four Scruples of *Pekoe*: After these three, which were set before the Fire, had stood six Hours, the Spirits were of a most beautiful green Colour; the *Pekoe* afterwards turn'd very dark, the *Hysson* scarce transparent, the *Green Tea* very brown, but still transparent. At the End of the Time above specified, when the Spirits were pour'd out upon three Saucers, they were all of a deep dark green, and very thick; the

Hysson Leaves when dried, were of a whitish green Colour, and had lost thirteen Grains, *i. e.* near a third part; the *Pekoe* had lost twelve Grains, the *Green* thirteen Grains and a quarter, exactly one third. The Spirits wherein the *Hysson* had been infused, when exhaled, left thirteen Grains of a greenish brown, and transparent beautiful Gum; the *Pekoe* left eleven Grains and a half of Gum like *Lacca*: *Green Tea* afforded thirteen Grains of a green coloured Gum. Of those which had stood thirteen or fourteen Days in the cold Infusion, *Green Tea* lost seven Grains, and had seven Grains of Gum; *Hysson* left seven Grains of a very bitter, astringent and delicate tasted green Gum; *Pekoe* lost six Grains, and had six Grains of a brownish black Gum. The Tinctures drawn in the cold, were much more beautiful than those drawn in the Heat, and had a finer Flavour; the dried Leaves were of a clear sparkling Colour, as tho' cover'd with some Resin: These soon expanded when put into boiling Water, but the other Leaves which had stood in the hot Infusion were so crisped, that they expanded not before they had been two or three Hours in Water: This *Hysson Tea* infused in several boiling Waters, till Copperas would tincture the Liquor no longer, when taken out and dried, weighed only nineteen Grains: The *Pekoe Tea* weighed eighteen Grains and a half; the *Green Tea* nineteen Grains.

^x I put a little of the Gum, extracted by the Spirits, into cold Water, and setting it before the Fire, a great Part of it instantly dissolved and tinctur'd the Water green, making it exceeding bitter and astringent.

^y I laid six Grains of the Gum on a Fire-Shovel, heated red; it all quickly flow'd, burnt away in a crackling Flame, and left only a few white Ashes.

then, this Leaf affords us, 1. A thin Oil, which is dissipated either by lying long in the open Air, or by Infusion in cold Water. 2. A semi-balsamick Liquor somewhat grosser than the former, 3. A thick and black subresinous Oil. 4. A little Resin, friable in the cold, and inflammable by Fire, but not dissolvable by Water. 5. A Gum consisting of more Mucus than Oil^z, and therefore either dissolvable in Water, or combustible in the Fire. This is the true Texture of the Oil this Leaf affords; as for that of its Flowers and Seeds, I have had no Opportunity of examining it, nor are these such Parts of the Plant, as are used separately, either here or in *India*.

Tea contains a Salt too, but 'tis chiefly fixed, when 'tis brought to us^a. It has also a solid Earth, which neither Water can dissolve, nor Fire destroy^b. And as most other Vegetables have their proper Juices, so the *Tea* Leaf, when green, has its own peculiar Humour, which is neither aerial, pinguedinous, nor resinous: Thus Celandine has a yellow, Aloes a golden colour'd, Sow-thistle and Spurge a white milky Juice, and that of *Tea* is yellow; but as this evaporates in roasting, its sensible narcotick Quality is lost. This Juice seems therefore to contain much

^z All young Sprigs, or Shoots of Trees have their Bark well stor'd with this kind of Matter, which fences them against the Winter cold, and likewise the Leaves of Ever-greens, whereby they are preserved during Storms and Frosts. Hence we are convinced from this Analysis, that *Tea* Leaves must continue green through the Winter Season. Ever-greens abound more with Oil than other Plants, because their excretory Ducts are narrower, or have smaller Diameters, whereby they perspire less in the same given Time than others, and what they do send off consists of finer and smaller Particles; for Oil not being capable of the same Degree of Motion, from an equal pulsive Cause, as Water, nor consisting of such subtle Parts, therefore less of this goes off, in Proportion, than of the latter; and where these Circumstances meet in a Shrub or Leaf, well stor'd with Oil, such will bid Defiance to the Winters cold. But upon the Summer's Return, when Nature appears in her greatest Beauty and Glory, and the Heat dissolves, and raises the Salt, Oil

and Phlegm afresh from the Earth, then are these old remaining Principles in the last Years Leaf, either lost, or so indissolvably fix'd and cemented, and the containing Vessels become so rigid, indilatable and incapable of new Attrition and further Growth, that the old Leaves must fall off, and give way to new ones.

^{a b} I took two Drams of *Tea*, and drew off all that Infusion or Decoction cou'd extract, then dried and burnt the Leaves, put the Ashes into the Liquor again, and evaporated it over a slow Fire to Dryness. I pour'd Water on the Residuum, and filter'd it twice, then dried the Earth well, which weighed thirty six Grains. I then evaporated the filtrated Liquor slowly, and there remained eight Grains of an exceeding brackish brown Salt, which would neither ferment with acid Spirits, nor Lemon Juice: A Proof that fixed Chymical Salts, which ferment with these, are not the true Product of the Vegetable, thus chymically analyzed, but the Effects of the Fire.

much subtile and volatile Salts of a very fusive Nature^c.

The different
Proportions
of these Prin-
ciples.

The Proportion of these Principles to one another, appears, by the most careful Experiments I could make, to be as follows: *Bohea Tea* contains one tenth of Phlegm and volatile Salt; this constitutes only a thirtieth Part of *Green*^d. The fix'd Earth, which is neither to be carried off by Decoction nor Incineration, constitutes about a third part of both, only *Green Tea* has a thirty first Part more Earth than *Bohea*^e; and

^c To know the Effects of Narcoticks on our Fluids, I took two Drams of *Cocculi Indici* grossly powder'd, put them into a Tea Pot, and pour'd above half a Pint of boiling Water on them, which stood six Hours; and then putting three Tea spoonfuls of this Liquor into three Ounces of Blood, it turn'd it to a beautiful Crimson red, and dissolved four Times more than either the fixed or volatile alkaline Salts. Next Day I set it before a very hot Fire, till about half a Spoonful of it was evaporated, but there appear'd not the least Tendency to a Coagulation in it: Into the Remainder I put fourteen Drops of Spirit of Salt, and let it stand three Hours; then viewing it again, I found 'twas coagulated as far as the Spirit had reach'd, or rather consolidated into so many hard Knots; but the Blood in the Interstices was still thin, tho' blacker: I broke two or three of these Knots, which were black without, but of a whitish brown within, and spongy as a Mushroom: Yet the Blood was not rarified *de novo*, nor took it up any more Space on the Saucer, than before the Spirits were dropt into it.

Corollary 1. From this Experiment we learn, why Narcoticks are so dangerous and destructive when given to Excess: The Multitude of their volatile Salts destroys the Texture of the Blood, fuses, and makes it take up much more Room in the Vessels; while at the same Time these Tubes, which should give a Check and Resistance to Rarefaction, are relaxed, and laid by resty and useless, through the large Quantity of Oil, as well as Salts, which they contain; for this *Tea* had much Oil swimming at Top. 2. From

hence we know the Reason why Ale, that has *Cocculi Indici* in it, is clearer and stronger in proportion, and will keep longer; and why after five or six Months, it may be drunk pretty safely, *viz.* during Fermentation, and after its barrel'd up, these solid, minute, penetrative Particles of Salts, enter the Cohesions of the Liquor, distend and break them; and because they are exceeding light, they maintain their respective Positions of Gravity, and as they break the other gross Cohesions, the last fall to the Bottom, and leave the Liquor very clear; but this Attenuation, or Division of these fundry larger Combinations, causes them to emit their whole Spirits into the Ale, whereby it becomes stronger; but these narcotick Particles being of the smallest and lightest Sortments, they either exhale, or are imbibed by the Cask, till they are wholly spent, and so leave the Liquor clearer and stronger, and not prejudicial to the Drinker. 3. From this Experiment we see how deceitful it is to trust the Cure of over dozed Opiates to Bleeding, and the cold Bath, for the first cannot give a brisk, continued *Stimulus* to the whole nervous System, nor the latter take off the Blood's Rarefaction, or its Cause. 4. We hence see the Reason why an unnecessary and frequent Use of volatile Spirits in *Tea*, must make the Drinker pale, feeble, faint and vapour'd; they rarify the Blood in the same Manner, tho' not to the same Degree as Opiates.

^d See the Notes on the former Section, under the Letter^o.

^e I took *Green* and *Bohea Tea*, of each three Drams, infused them separately in several boiling Pipe Waters, a whole Day

and:

and the last has about a thirteenth Part more Salt than the other, *i. e.* *Green* has one fiftieth Part of a reddish Brown, brackish, penetrating Salt: *Bohea* $15\frac{1}{3}$ Part of the same Salt^e. The lighter Sortments of Earth that fly off in Decoction and Evaporation of the filtrated Liquor, and the Oil make up $\frac{8}{17}$ and a half of the whole^f. But the Proportions of these Principles drawn off by Infusion in three sundry Waters, is different from this; for the whole Phlegm is taken out, and about one half of its Salt^g; something more than one half of its fixed Earth^g, and a twenty seventh Part less Oil, than Salt and Earth taken together^g. But these Quantities differ according to the Purity or Mixture

and Night, and next Day repeated the same again; then I pour'd the whole Infusions and Decoctions of each Sort into two separate Vessels, and incinerated the Ashes till they were white, and then put those of the *Bohea* to their own Liquor, and those of the *Green* to their *Tea*, and exhaled both in two wide, shallow Pans, till their *Residuum* was thoroughly dried, and their Oil consumed: On this I poured fresh Water, and filter'd it thrice; then dried the Earth, and exhaled the filter'd Liquors to a dry, reddish brown Salt. The *Green Tea* left sixty one Grains of Earth, and the *Bohea* fifty nine and a half; the first had twelve Grains of Salt, and the last thirteen. But this Experiment must be made very carefully, for I repeated it several Times with different Success, until I took two Pots of equal Depths and Diameters, and placed them in the same Degree of Heat with the Extracts of the first Evaporation (having pour'd them out of the Pans when they turned thick, least in scraping off the Earth, I should get some Iron with it, and be prevented in making a just Computation) and let them stand over a small clear Fire, till they ceased smoaking even when removed from it; for the Oil of *Tea* is exceeding closely attached to its Earth, and requires Time to be separated from it. 'Tis easy to observe when the Oil rises, for after the Smoak of the Phlegm wholly ceases, then a palpably thick, blue, strong Smoak immediately ascends, which rises and ceases by Turns,

even after the *Fæces* seem dry, especially if taken from the Fire; this thick Oil carries up some Earth with it, as the Phlegm did some lighter Parts.

^f For if we take a Quarter of an Ounce of *Tea*, there is eight Grains of Salt, two Scruples of fixed Earth, and four Grains of Phlegm, so that sixty four Grains of Oil, and small light Earth must remain: But a tenth Part of *Bohea* being Phlegm and volatile Salt, and only a thirtieth Part of *Green*, *i. e.* *Bohea* having three Times the Quantity of Phlegm that *Green* contains, and their fixed Parts, after Evaporation not being so widely different, therefore *Green Tea* affords more Oil than *Bohea*, the Reverse of which is the common Opinion.

^{g g g} Two Drams of *Green Tea*, infused in three several boiling River Waters, which stood two Hours before the last was poured off; when the whole Liquor was evaporated, there remained twenty six Grains of fixed Earth and Salt; the Leaves taken out of the Pot and dried, weighed one Dram and seven Grains; four Grains of Phlegm being subtracted from the last, we have twenty three Grains of Oil left; for it being evaporated over an exceeding slow Fire, the Earth had no Opportunity to rise; fresh warm Water being pour'd on the Earth and Salt, and let stand a little, then filter'd twice, and the Earth and Cup wash'd again with warm Water, the filter'd Liquor exhaled, and the Earth dried, I had four Grains and a half of Salt, and twenty

Mixture of the Water used in making the *Tea*, as I have already proved by many Experiments. Milk is a much more improper Vehicle than either River or Pipe Water, even when the *Tea* is boiled in it, for its Particles are too gross and smooth to relax the Vessels of the Leaf, to penetrate, dissolve, and draw forth its Principles ^h.

Different Vehicles extract different Principles.

Thus we see that different Vehicles extract different Parts from *Tea*; Water, its saline, loose, sulphureous and light mucous Parts; rectified Spirits, its fine aromack Oil; Spirits of Wine and a small Sand Heat, its fixed Oil, or resinous Substance; but simple Element, which is free from saline, metallick and earthy Parts, (that might either stimulate too much, or obstruct the Diameters of the smallest Vessels) draws out most of the Principles of *Tea*, in the least Time, and is most proper for conveying them into, and mixing them with our Blood: But then this Water must be hot, that its Particles may be rarefied, and so disposed to penetrate into the Leaves, and dissolve their Salts, their looser Sulphur and Earth.

Of Sugar with *Tea*.

Sugar not only makes the Liquor more palatable, by qualifying its bitter astringent Taste, but is also a good Cleanser of the Lungs, and a gentle Stimulator of the Kidneys; and the finer Sugar we use, it answers these Intentions so much the better: Therefore gross, cachectick and heavy Bodies, should use the finest in their *Tea*; but this being too sharp and abrading for thin, hestick Constitutions, these should prefer the more gross or coarser Sort, which having more Oil, lubricates and softens more, and stimulates less, and therefore will sooner occasion Obstructions, and leave a *Lentor* on the Insides of the Vessels and Strainers of lax and unweildy Habits ⁱ.

The

twenty one Grains and a half of Earth. --- *Bohea Tea*, two Drams, infused the same Time, in the same Sort and Number of Waters, afforded also twenty six Grains of fixed Earth and Salt, and the Leaf dried again weigh'd one Dram; twelve Grains subtracted from this, for the Phlegm, and we have twenty two Grains of Oil, I had four Grains and a Quarter of reddish brown Salt.

^h I boiled a Dram of *Green Tea* twenty five Minutes over a slow Fire, in a Pint of Milk, then strain'd it through a Sieve, wash'd the Leaves in cold Water, dried and weigh'd them, and found they had lost only twenty three Grains.

ⁱ For the coarser the Sugar the more

viscous it is; its essential Salt is more strictly united to its Oil and viscous Earth, which the Lime-Water, Lees and Eggs, used in its sundry Decoctions and Clarifications, divide and attenuate, or carry down to the Bottom, or raise them to the Top in a Scum; and the oftner these are repeated, the finer it is. --- This coarse Sugar used moderately, is a notable Balsamic, and serviceable in sheathing up sharp Humours, which irritate the Lungs, and excite a troublesome tickling Cough. — But where gross Phlegm loads and stuffs the Lungs, double or treble refined Sugar, or white Candy, incide, attenuate, break, and separate this Viscidity, and gently irritate the Organs of

of Respiration to pump it up. For this Reason it's good in a Cold, when the retained perspirable Matter is thrown upon the Thoracic Contents, to be from thence discharged. This fine Sugar is no less useful in several Viscidities of the Blood, or too great Serosity of the Juices, the Solids being lax and sluggish; here its fine Salts attenuate and prepare the first for Motion, Circulation, and Evacuation; it abrades the slimy *Mucus* from the Infides of the Vessels; by the Solidity of its saline Particles, and the fresh *Momentum* raised in the Blood, gives it a better Consistence. Its especially beneficial to the aged, phlegmatic, and sluggish; and to gross bodied Children, if moderately us'd. It agrees well with cold Climates, foggy Air, Winter-Season and rainy Weather. It's also of Use in gravelly Cases, being a fine Diuretic; in all which Cases it's well adapted to *Green Tea*, joyns Issue with, and makes it answer better. --- Coarse Sugar, containing much of its Oil and its Salts not being subtilized, nor having their sharp *Spicula* unsheathed; but being more hid in the coarse Oil and viscous Earth; as also the Salts of the Lime and Lees; therefore, I say, it affords much Oil to the adipose Vesicles; in which, with the Adhesion of its fine earthy Parts to the Sides of the Vessels, make it fitter for thin, meagre, unhealthy, or hectically disposed Habits, whereby it's better suited to *Bohea Tea* than *Green*. But fine Sugar is the opposite to very choleric Constitutions; for being too stimulating, it encreases the Motion of the Fluids; its Salts wear the Infides of the Vessels, and dry the Body; for this Reason should meagre Persons take Care how they make too free with it; nor should they indulge themselves an Excess of the Coarse; for tho' its Salts are not so naked and sharp as to wear the Vessels with their Solidity and Number, yet it's too apt to turn acrid, and render the Juices such. Coarse Sugar is injurious to phlegmatic and bulky Bodies, seeing it encreases the Oilyness and Viscidity of their Juices, over lubricates and relaxes their Solids, begets many and obstinate Obstructions, which frequently

terminate in a Cachexy. The much Salt and Lime in fine Sugar, excite Thirst, dry the Blood, and encrease its Motion; therefore should it be sparingly used in hot, dry Weather, hot Countries, and ardent Fevers.

Sugar is imported from both *Indies*, but especially from *Madera*, *Brazil*, and the *Caribbe Islands* in the *West-Indies*. It was unknown to our Predecessors in *Great Britain*, till *Columbus* discover'd the *American World*: The Antients either knew not the Cane, or the Manner of exposing its Juice; or they were ignorant of the Art of condensing, hardening, and refining it, and so must have been Strangers to our Sugar. Some of them mention *Indian Salt*; and withal, that it spontaneously ouz'd out of the Cane, and harden'd to it like a Gum, and was friable between the Teeth like Salt. *Salmasius* says, theirs was loosening and refreshing; but ours we find is hot, and excites Thirst. However, it seems, that theirs consisting only of the finest and most mature Parts, which had exuded and condensed in the Air, was therefore better than ours; the same Author also assures us, that the *Arabs* had the same Art of making Sugar 800 Years ago, which we now have. Sugar is the essential Salt of the Reed and Cane, prepared by repeated Decoctions and Clarifications; its exceeding Sweetness arises from the intimate Union of its Salt and Sulphur. Several Authors charge the chief Cause of the Prevalency of the Scurvy in the Northern Parts of *Europe*, upon it; because Chymists extract out of it a most acid, sharp, penetrating, and dissolving Spirit. Tho' I am not to answer for the Effects of its Excess, yet this seems a groundless, if not ill-natur'd Reflection; for we read of the Scurvy in *Britain* when it was a *Roman Colony*; and we know also, that Salt, Honey, Salt Petre, Brimstone, &c. afford more acid and corrosive Spirits; and the first of these is of far more frequent and general Use than Sugar. The coarser Sugar is sweeter than the finer; for retaining more Oil, it continues longer on the Taste; for if the Oil be separated from the Salt, neither of them

The Infusions of all the Sorts of *Tea* are reſtringent^k, and their greater or leſſer Degree of Reſtringency, is in proportion to the Weakneſs or Strength of the Liquor drunk, and the Elſticity or Laxneſs of the Drinker's Fibres. But tho' all theſe Infuſions act as Aſtringents, yet ſome aſtringe more powerfully than others; all Kinds of *Bohea* aſtringe in a leſſer Degree than thoſe of *Green*, and common *Green Tea* more than the *Hyſſon*. And the different Principles of *Tea* act after a different manner on our Fluids, when ſeparated from the reſt; for its Salt diſſolves the Blood^l, its Earth neither attenuates nor coagulates it^m, its Oil

On what its Aſtringency depends.

How its different Principles act on our Solids and Fluids.

them is ſweet, but the laſt is acid, and the other is inſipid: But when both are mixed, the Salts penetrating the Pores of the guſtatory Nerves, make Way for the Oil to follow; both entering, and gently evocating, cauſe the Sweetneſs of its Taſte. Sugar was originally the Product of the *East-Indies*, from thence it was brought to *Barbary* and the *African* *Iſlands*, as the *Madera's*, *Canaries*, &c. then it crept to the *West-Indies*, as *Jamaica*, *Barbadoes*, *Nevis*, *Antegoa*, *Monſerrat*, &c. and to the *Spaniſh* *Indies*; then into *Europe*, as *Spain* and *Portugal*, but in very ſmall Quantities. *Maderas* Sugar was formerly eſteemed beſt; that from the *Canaries* next; and laſtly that from *St. Thomas*: But now *Jamaica* and *Barbadoes* are inferior to none; next to them is the *Liſbon*, tho' it is not ſo white, its more fat and oily.

Sugar ſucceeded the Uſe of Honey; and has made the laſt to be almoſt forgot, being diſagreeable to cholerick Conſtitutions, flatulent Bodies, lean Perſons, and thoſe who are ſubject to Inflammations of the *Viſcera*; but yet its better for the phlegmatick, aged, cold or moiſt Conſtitutions, being more healing, inciding, detergent, diuretic and opening. The Antients gave Sugar in Fevers, Hoarſeneſs, Inflammations, ardent Thirſt, Strangury, Heat and Dryneſs of Mouth, Throat, Stomach and Breſt. The beſt Sugar is ſolid, light, and exceeding white and ſweet, gliftering like Snow, hard and not ſpongy, melting quickly in Water, &c.

^k I put two ſmall *Tea* Spoonfuls of warm, ſmall *Green Tea* on a Saucer, as much weak *Bohea* on another, and the like Quantity of tepid Water on a third, and then pour'd two large Spoonfuls of Blood on each of them; after they had ſtood eighteen Hours in the Window of a cold Room, the Blood with Water was the thinnest, of the lightest Colour, and had moſt Serum on its Surface, that with *Green Tea* was darker colour'd and thicker, that with *Bohea* was very dark, near to a black Colour, and ſomewhat thicker than the laſt. Note, The Blood was ſtir'd about as it ſprung from the Vein, to prevent its Coagulation.

^l I took fix Ounces of Blood, and preſerving as much as poſſible the Fluidity it had in the Body, pour'd two Ounces of it upon a Saucer, and put to it a Grain and a half of white purified Salt of *Tea*; to other two Ounces, I put two Grains of Salt of Tartar; and on a third Saucer I put two Ounces of Blood only; and ſet all three in a cold Room 'till the next Morning: That with the Salt of *Tea* had ſeparated much Serum, and the Blood below it was very thin, and of a light red; that with Salt of Tartar was yet thinner, had more Serum on its Surface, and was of an exceeding light cherry red; the Blood alone had neither ſo much Serum as the other, nor was its Texture ſo much broke, but continued thicker and of a darker red.

^m I put a little of the ſmall Earth, which remained in the Cup after the third Filtration, into two Ounces of Blood; but it neither

Oil thickens it a littleⁿ, but its Gum very much^o, whether extracted in an aqueous or spirituous Vehicle; and its Oil and Earth extremely contract our Fibres^p.

Having

neither coagulated nor dissolved it; all the Effect this had upon it, was only it made it somewhat blacker.

ⁿ Putting some of the Oil which hung on the Iron Cover of the Crucible into one Ounce of Blood, it made it much blacker and thicker than that which stood upon a Saucer by it self without any Mixture.

^o Taking three Saucers, with two Ounces of Blood on each, I mixt with one three Grains of *Tea* Gum, drawn with Spirits of Wine; with another, three Grains of this Gum drawn with Water, but made no Addition to the Blood on the third Saucer: I set them in the same Window as before, and let them stand twenty four Hours: The first was very black and thick coagulated, (tho' its Coagulation, after it was drawn from the Vein, had been prevented,) and its Surface was dry; the second was neither so thick, nor black, but moist, and had a little *Serum* on its Surface; the last was of a light red, and abounded with *Serum*. When they had stood two Days more, above two parts of this was clear Water, and its Bottom was only a light red Gore, but the first was scarce moist at Top, and the second had separated about one Dram of *Serum*.

^p I took sixty four Grains of a long thin Muscle, on the Inside of a Shoulder of Mutton, the Length of the Muscle was five Inches and four eighths. I separated the Fibres longitudinally into four Parts, and put one into a Spoonful of Water, wherein was dissolved four Grains of *Tea* Gum extracted in Spirits, another into a Spoonful of very small *Green Tea*, a third into a Spoonful of *Bohea Tea*, the fourth into a Spoonful of warm Water, and let them stand twenty four Hours; then took them out and measur'd them again, the first was become very rough, hard, and twisted up like a Cat-gut before a hot

Fire, and when laid on the Rule or Measure, was only three Inches and a half long; its utmost Stretch, without breaking, was but four Inches: The second was three Inches and five eighths; at its utmost Stretch four Inches and a half: The third was four Inches and one eighth, and its furthest Stretch five Inches: The fourth was four Inches and seven eighths, and extended to six Inches two eighths, but broke in two Places.

Corollary 1. From these Experiments we see, That the Astringency of *Tea* depends upon the close and strict Union of its Oil and Earth; for its Salt dissolves the Blood, and also its Salt and *Caput Mortuum*, in Proportion to the Quantity of Salt in that Earth; its Oil thickens it a little, but the Oil and Earth together act in a high Degree of Restrictingency. When several Waters had drawn off as much Earth as was separable that Way, tho' Copperas turn'd the Liquor of a light Blue, for two or three Infusions more, yet these had no sensible Restrictingency, because then the light separable Earth was drawn off, and that which gave the Tincture was Oil only. Again, when we came to make a strong Decoction, this fresh violent Motion and Agitation of the Leaf, separated and brought off fresh Earth with the Oil, which revived its Astringency, and restor'd its blue Tincture with a Solution of Copperas; and when the Decoction could not loose or separate any more Earth, then the bitter astringent Taste was lost as before: But the Leaf dried again, put into a Crucible, and set in an open Fire, afforded a more fixed Oil and Earth, more bitter and astringent than any of the former. *Corol. 2.* Hence we see, that Astringents, by the Asperity of their Particles, corrugate the Fibres and Membranes, and make them draw up closer, and by thickning the Fluids, prevent them from running off so

Having enquir'd into, and discover'd the Principles of *Tea*, it remains that we apply its Virtues and Uses to particular Cases; which *Sim. Pauli* affirms

fast as before; and therefore Astringents are called Strengtheners, and differ from Stypticks only in Degree of Efficacy. *Corol. 3.* Strengtheners act upon our Solids, not only by bracing them more firmly, and expelling the superfluous flow Juices in the small Vessels, whereby they act more powerfully upon the remaining contained Liquor; but by adding Bulk to the Solids, in a daily Supply of proper Earth. Now the Strength of different Animals of the same Species, or of the same Animals at different Times, is by several, demonstrated to be in a triplicate Proportion of the Quantities of the Mass of Blood; for all the Strength of an Animal is the Force of the whole Fibres of all the Muscles taken together; therefore all Restrictants increasing the Strength increase also the Force of the Muscles. But Restrictants preventing the too profuse Waste of Fluids, may so thicken and increase the Quantity of the Blood, as to diminish the Strength of the Animal; for the *Æquilibrium* betwixt the Blood and the Vessels being destroy'd, the Strength is wonderfully impair'd, as in a diminish'd Perspiration: Though this increase the Blood, yet it lessens the Strength, because the retain'd Matter, which should have been expell'd, so alters the Mass of Blood, as renders it unfit for muscular Motion. Suppose the increased Quantity to be joined by an extraordinary Viscidity, the small separable Parts decreasing as the Viscidity increases, the Quantity of animal Spirits separated in the Brain will be less, and the Tensity of the Fibres, being in Proportion to the animal Spirits, and their Disposition to Motion, the Fibres cannot counterpoise the great Weight of the Blood, and hence must follow a Decay of Strength. *Corol. 4.* Hence we see why *Green Tea* is a greater Astringent than *Bohea*, tho' the first contains more Oil, *viz.* Because the Oil of *Green* is more firmly cemented and attached to its Earth, therefore I always found the se-

venth Infusion or Decoction of this, as much tinctur'd by a Solution of Copperas, and deposited as much Sediment, as the fourth or fifth of *Bohea*: And as the Oil of this is less and more separable, so 'tis thinner, not having sufficient Time on the Shrub to become of a resinous Nature, and be incorporated into the very Substance of its earthy Principles. *Corol. 5.* From the triple Decrease of Weight in *Bohea* more than *Green Tea*, in the former Experiments, though it seem really Phlegm that exhales; yet this is not reconcilable either with Reason or Experience, for both having had the same Advantage of roasting and curling, and the Leaf of *Bohea* being more tender and porous, and its Vessels larger, we cannot imagine but it must part with its Phlegm sooner, and more easily than the other, whose Vessels are more compact, and the Phlegm entangled with more Oil: We must therefore allow a part of this Loss to consist of the more separable, subtile and fine Salts: But these Salts in the tender Buds, partaking more of an acid Nature than in the full grown Leaf, therefore *Bohea* must contain more of a narcotick Quality than *Green*; these remaining subtile Salts, being more acid, will consequently prick the Nerves more, and we are in greater Danger of Stupidity, Tremors, and sickly Fits from this than from *Green Tea*; and it will (generally speaking) affect the nervous System more sensibly and frequently. --- From the whole preceding Course of Experiments, we shall have so much Light and Certainty of its Nature and Properties, that our following Discourse, on the medicinal Qualities of its dietetick Use, will flow as so many easy and conspicuous Corollaries. And that we may form a clearer and more just Idea of the manner of its Operation, I think it necessary to mention what seems to me the true mechanical Causes of those Distempers, wherein the Use of *Tea* is recommended or caution'd against.

affirms to be local, and do not hold with *European* Inhabitants: But *Pechlin* refutes this Opinion, maintaining that it is good in many Diseases.

And doubtless 'tis of special Service in Disorders of the Head, proceeding from cold and sluggish Causes, which so alter the Mass of Blood, Lymph and Spirits, that they have not a free Course thro' the Vessels of the Brain, but adhering to their internal Surfaces, either shorten or shut up their Diameters; such is a sly, thick, pituitous Disposition of the whole Mass of Blood, which, when it arrives at the small and tender Vessels of the Brain, their inherent Force not being equal to the Strength necessary to propel a viscid Fluid along their Canals, its Motion is therefore slow; but the quickest Motion being always in the Axis of the Vessels, from the repulsive Collision or Resistance of the Sides, and the most fluid Parts of the Blood being susceptible of the greatest Motion, these will therefore be chiefly propelled; while the more viscid Parts, unapt for Motion, as they consist of grosser, less prepared, or more attractive and adhesive Particles, give the greatest Resistance to the Actions of the Solids and Vessels, and lie nearest their Sides, which being weak, soaked in Humidity, and over lubricated, have not Force to shake them off, and throw them into the Axis; therefore they first move slowly, then lie still and stick to the Sides of the Vessels, where they attract other Particles of the like Nature, till they shut up the Vessel, and prevent the Motion of the Blood or Lymph.

Now what Diluter can be better in this Case than *Green Tea*? For the Water thins, its Salts separate the sluggish Mass, they stimulate and invigorate the Vessels, increase the Celerity of the Blood's Motion, its Earth and Oil draw up and contract the relaxed inelastick Tubes, and dispose the slimy adhesive *Mucus* to be thrown back into the circulating Mass, and thereby widen the narrow, and open the obstructed Vessels of the Brain. The Fluids being thus disposed for Motion, and the Vessels for Action, the different Cohesions of the first will be broken and expell'd by proper Outlets: The Blood being thus thinned, 'tis fitter to pass all the Meanders, Windings and Circumvolutions of the Brain, and have its nervous Juice strain'd off in greater Plenty, which will invigorate the Fibres and Solids of the Body, whereby the Vessels and Muscles will perform their Office more effectually, with more Ease and Speed, and longer; and a beginning Heaviness, Dulness, Drowsiness, Lethargy, or *Coma* cured, and their dangerous Paroxysms prevented, or set further off.

This Liquor is no less beneficial in preventing a threatened Apoplexy or Catalepsy from these Causes; for that the Body is in Danger of a

T. good in Diseases of the Head, from a Lensor of the Blood, and a Laxness of the Vessels.

In a Lethargy, Apoplexy, Catalepsy, Dulness and Drowsiness.

Seizure, or Attack from those sleepy Diseases, may be foreseen from active Persons becoming lazy and idle all of a sudden; turning dull; sleepy and indifferent to all Exercise or Motion; their Speech is slower than usual, they sometimes throw up Phlegm, their Eyes are pale, turgid, moist and dim, their Head swims, they breath with more Difficulty after Exercise or Motion, they have frequent Tremors, and Snortings, and are Hag-ridden. All these Symptoms proceed either from a natural lax Fibre and sluggish Blood, or by making too free with meally Aliments, and unripe rough Fruits, or by diminishing former necessary Motion, or a too great Waste of the more fluid Parts of the Blood thro' the relaxed secretory Vessels, or from a want of good Blood; or Deficiency of Bile; or a Retention of the thicker Part of the Blood and Humours, or their Adhesion to the Insides of the weak and lax Vessels, &c.

Green Tea good in Diseases arising from the Thickness of the Blood, or its Abundance of earthy Particles which make it grumous.

Green Tea is no less serviceable in Lethargies, Apoplexies or Head-aches, from an Adhesion of the thicker Parts of a grumous Blood to the Insides of the Vessels, whether in the carotid or vertebral Arteries, or in the small Vessels of the Brain; for if these grumous Parts of the Blood stick long to the Vessels, they will produce polypous Contractions, either within the *Cranium* itself, or in the Heart or great Arteries: These in the Heart must be succeeded by a Palpitation and unequal Pulse; those in the Brain, by a Swimming of the Head, and Dimness of Sight; upon a small Increase of Motion or Heat. Now the dietetick Use of *Tea* dissolves these grumous Adhesions; and if the *Polypus's* be not yet formed, prevents their Concretions, cleanses the Vessels; and by a gentle Stimulation and Corrugation, increases their Force and Action, whereby they prevent the Blood's running into such pernicious Combinations. In the former Cases the *Tea* should be drunk very strong, and in a midling Quantity Morning and Afternoon; in the latter, weaker and more plentifully, and be attended with Exercise in both. *N. B.* In this, and the whole following Discourse, I suppose the Drinkers betwixt sixteen and sixty Years of Age.

It answers the like Design in Diseases from an Inflammatory State of the Blood.

If Diseases proceed from an inflammatory Thickness of the Blood, discoverable by a sharp, constant Fever, a chronick and violent inflammatory Pain of the Head; and a Phrenzy, with a Redness, Tumor and Inflammation of the Eyes, (causing involuntary Tears) and the Face; then small *Green Tea* drunk plentifully, after sufficient Evacuation by Bleeding, thins the Blood; and lessens its Resistance against the Vessels, causes it to move more easily, to mix better, and afford more animal Juices, and fits it for Nutrition and Evacuation, *i. e.* It brings the mutual Resistance and Force of Solids and Fluids nearer to an *Equilibrium*; for all these Symptoms arise from an increased Circulation of the Blood;

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in proportion to its Consistence; but this Consistence being too thick, and it meeting with no Hindrance in the greater Vessels, they must exert a greater Force over it, and throw it into the smaller; which being weaker, and not capable of great Opposition, either as to the thick Liquor, or the unnatural superior Force of the emptier great Vessels, they must therefore be loaded and overpower'd with a thick Mass, which by its slow Motion loses its natural and due Consistence, and being more at rest separates into different Parts: But the small restringed Vessels exerting their greatest Force in resisting this unwieldy Load, the Blood not being so susceptible of Motion, resists them again; and the Parts of the Blood opposing the Celerity of each others Motion, causes a great Heat and Redness of the external Parts. In the mean time, the thinner Parts of the Blood being still susceptible of Motion, by the *Conatus* of the small Vessels, they are thrown back into the Veins and greater Vessels, while the thicker continue in the small, which distend and swell the Parts: Hence a full Eye, involuntary Tears, and a Heat of the Parts, from the mutual Attrition of the Parts of the Blood against one another, and of this against the Vessels, and they against it: But the Vessels being stimulated and contracted by the Use of *Tea*, and the Blood fitted for Circulation, Secretions and Evacuations, the Balance of Nature is brought nearer, and the Body relieved.

In a *Vertigo*, or swimming of the Head; when Objects seem to turn round, because the Images which proceed from them fall successively upon different Parts of the *Retina*, from the lateral Pressure of the Arteries, and a Concussion of the *Retina* and Optick Nerve, occasion'd by the Extension, Oppression, and Load of the Arteries. *Green Tea* drunk (not too strong) once or twice a Day, after bleeding and vomiting, will be very serviceable in removing this Indisposition, because 'tis of a diluting, attenuating, cleansing, stimulating, and invigorating Nature; the Water, wherein 'tis infused, thins the Blood, its saline Particles give it a fresh *Momentum*, cleanse the Insides of the Vessels, separate and divide the Cohesions, and give such a *Stimulus*, that tho' they are too fine to be perceptible any where else, yet when they enter into the smallest Fibres, by their pricking and shaking of them, they irritate their Vibration, and prevent the future Lodgment of that useless Load in the Cavities of the Vessels, or their Interstices, which clogs their Motion, and relaxes their Coats and Membranes ⁹.

Another

⁹ Dom. Ambros. Stegmann. de Decoct. Herb. Theæ, Miscel. Cur. Vol. 5. p. 36. tells us of a Woman, who from a Fright

she received when in Labour, fell into an Epilepsy, in which she continued three Months, and by his Direction was cured

It dispels Drowsiness and Clouds that hang over our intellectual Faculties, and enlivens our Ideas.

Another Thing which mightily ingratiates the Use of this Liquor to Men of a sprightly Genius, who court the Continuance of their lively and distinct Ideas, is, its remarkable Force against Drowsiness and Dullness, Damps, and Clouds on the Brain and intellectual Faculties^r; for it keeping

of it by drinking *Tea*. And p. 37. He gives us an Account of a Boy seven Years old, who daily had frequent Convulsions, like an Extasie, and when both inward and outward Means had been long used in vain, by the Direction of several Physicians, he advised him to drink *Tea*, which cured him. p. 38. He says he cured many Children who had Convulsions, after the Small Pox and Measles, with this Liquor: I suppose he means by the Infusion of *Green Tea*.

The Reason why *Tea* creates such a vigilant Vivacity, dispels Heaviness, and is therefore beneficial to lucubratory Students, is, 1. The gentle Irritation which the Salts give to the Fibres, whereby the Course of the nervous Fluid is roused and determined, and commanded into the Muscles to prevent their falling back; but the Astringency of the Liquor contracting the Fibres, causes this Juice to circulate more briskly in the Brain: Hence comes a more plentiful Stock of animal Spirits, to supply the Organs of the intellectual Faculties. 2. By this Stimulation it not only begets a better Contraction in the exquisitely sensible nervous Coat of the Stomach, which is quickly communicated to the Brain, whereby it shakes off that Load of Juices in its Vessels, which diminish'd their brisk Tone, and Derivation of Spirits into the Nerves, which occasion'd a Drowsiness and Inclination to Sleep, (for Contraction is opposite to Sleep, which is a State of Indolence and Relaxation) But the exceeding fine Earth and fixed Oil help to repair the Waste the Vessels have sustained by the Day's Exercise or Labour, and give them a fresh Supply, and better Firmness; for tho' the separable Parts of *Tea* be not volatile, yet they are exceeding fine and solid; the last Rubs of the adhesive latent *Lentor* from the Sides of

the Vessels, where they are furr'd up, and constitute a Part of them, where their Sides are clear and lie open to the Touch. --- The Reason given for this Vivacity, by the Liquors binding and shutting up the Mouth of the Stomach, and preventing the Rising of its Fumes into the Head, is ridiculous; there being no other Passage for those gross Exhalations to ascend by, but those of the Blood; therefore the Disorders of the Stomach cannot be the primary or immediate Cause of the Affections of the Brain, but the secondary only. For tho' an agreeable or pleasant Sensation from Meat or Drink upon the Stomach, (especially after intense Cold or Hunger, which contracts the Solids) may cause a soft undulatory Motion of the nervous Juices, and so relax the Nerves, and occasion a Desire to sleep, yet the Aliment upon the Stomach is the Cause of this sweet Sensation and gentle Relaxation; or if we suppose that Hunger has created Pain and Watchfulness, the Stomach is not the first Cause of this, but the acid glandular Juice discharged into the Stomach, and the Attrition of its Coats or Sides against one another in its Motion, when no intermediate Body lies betwixt them to be acted upon: Or should Flatulency abound in the Stomach, 'tis the *Flatus's* which distend its Coats, stretch them beyond their Tone, and from the Origin and Communication of the Nerves, raises a Pain in the Head. Acid or acrid Humours lying on the Stomach, prick its Nerves, which being communicated to the Brain, cause Pain of the Head. Too much Heat likewise relaxes the Solids, and disposes the Body to Sleep: Here the Infusion of *Green Tea* comes in as a very seasonable Restringent to brace up the relaxed Fibres, and restore them a better Tone: Hence the Use

keeping the Eyes watchful and clear, animates the intellectual Powers, maintains or raises lively and brisk Ideas, excites and sharpens the Thoughts, gives new Vigour and Force to the Invention, awakens the Senses, and strengthens and clears the Understanding; because by its thinning the Blood, through the Miniature of its Salts, it enters into, cleanses and clears the Glands of the Brain, increases the Secretion and Distribution of animal Juices, which compensate the preceding Loss of Spirits, whether spent on the intellectual or bodily Organs, it afresh invigorates the Fibres and Vessels, takes off that Laxness and Sluggishness which causes a Necessity of Sleep: The necessary Evacuation by the Skin and Kidneys are duly and regularly carried on at the same Time, so that the Body is not loaded with superfluous Juices, which make it dull and indisposed. On which Property *Waller* has thus descanted.

*The Muses Friend, Tea, does our Fancy aid,
Reprefs those Vapours which the Head invade,
And keeps that Palace of the Soul serene
Fit on her Birth-day to salute a Queen.*

And because it promotes a free Circulation of the Blood, gently deterges and comforts the Brain, that there is no Load, slow Circulation or Stoppage in any of its Vessels and Glands, therefore the Person, who frequently drinks it, is not terrified with frightful Dreams, unless he has loaded his Stomach with flesh Meat, and goes to Bed before Digestion, which compresses the descending Trunk of the great Artery, whereby greater Surges of Blood are sent up to the Head, to fill the Vessels, and disturb a free Circulation. It is good against frightful Dreams.

And as Pains of the Head and Megrim owe their Rise either to a stuffing of the Vessels with a gross sily Blood, or a Distention with an inflammatory Fluid, so that which thins and attenuates the first, and promotes the Digestion and Secretion of both, must be serviceable in this Case; and the drinking four or five Dishes of *Green Tea* once or twice a Day, will have this Effect, if not too strong, for then its Stimulation And for Megrim and Head-ach.
is

of *Tea* must be very advantageous in *China*, and other hot Countries. --- *Kircher*, lib. iv. of his *China illustrata*, takes Notice of *Tea* for clearing the Head, and opening the urinary Passages. *Alex. de Rhodes*, in his *Voyages & Mission Apostolique*, says, He always cur'd himself of a periodical Pain in his Head by *Tea*, and having often Occasion to sit up whole

Nights in *China*, to take the Confessions of dying People, he found such Benefit from *Tea* in those great Watchings, that he was always as vigorous and fresh next Day, as tho' he had rested all Night in Bed: Nay, by the Assistance of *Tea*, he sat up, as he says, six Nights together. *Vide Dr. Chamberlain in Treat. of Coffee, Tea and Chocol.* 12° 1685. pag. 46.

is too great: But to prevent frightful Dreams, 'tis best to take three or four Dishes in the Afternoon, but not too strong, lest it cause Watchings, and to forbear a Flesh Supper after it: The same Time and Quantity is best to prevent Drowsiness,

Against Diseases of the Eyes.

In Diseases of the Eyes, as Weakness, Dimness of the Sight, involuntary Tears, &c. from a Dilatation of the Glands, Distention of the Vessels, and Transudation of the Humours, or from an Increase and Condensation of the Coats and Humours, or a Lodgment of Viscidities in the small Vessels, and their distending and pressing upon the Optick Nerves, and preventing their free Communication with the Brain, whereby they emaciate, waste or subside; or from a simple *Plethora*, which overfills the Vessels, whereby the thinner Parts are strained off, and the thicker left behind: In all these Cases the Use of *Green Tea* is serviceable, for it lubricates the rigid, stimulates the lax and dilated Vessels, thins the thick, attenuates the viscid, and obtunds the acrid Blood, dissolves the coagulated, and by invigorating the Nerves and Muscles, they shake off the stagnated Juices: But in a Laxness and Dilatation of the Glands and their Coats, it must be drunk pretty strong and warm, in the other Cases weak and temperate.

In Dulness of Hearing from a Relaxation of the Tympanum.
In Rheums and Catarrhs.

In Relaxations of the Drum of the Ear (if not chronick) from cold, or other recent Afflux of pituitous Juices on the Vessels of its delicate Membranes, the Use of *Green Tea* is adviseable.

And 'tis of special Service in Rheums and Catarrhs, whether of the Nose, Throat or Breast, if drunk strong, four or five Dishes Morning and Afternoon. For those Diseases being a Defluxion of sharp *Serum* from the Glands about the Head and Throat, are often the Effects of diminished Perspiration, commonly called a Cold; for then what should be separated and discharged by the Skin, falls upon the Glands of the Head, and irritating them, causes a sneezing, running of the Nose, or a Cough, and sometimes Dulness of Hearing: Or these Catarrhs may proceed from whatever occasions a too great Accumulation of *Serum*, either in the whole Body, or in these Parts; such as the Diminution of renal or cuticular Secretions, which liquefies the Blood, and weakens Digestion; or from a natural Laxness of the Coats of those Glands, or a greater Flux of Humours to, or a slower Motion of the Blood about the Head. Now the Glands about the Head and Throat, are the most susceptible

* Dr. Jo. Ludov. Apinus, Obs. 70. Decur. 3. Miscel. Curios. gives an Instance of a learned Man who had been long Deaf, and used Issues, Spirit of *Sal Armoniack*, Purges, &c. in vain; but was speedily and

perfectly cured by drinking *Tea*: He had frequently before a sounding in his Ears, follow'd with a Crack, after which he heard better for some Days.

ceptible of this increased Quantity of *Serum*, because they are provided with the least Helps, either to oppose, or throw it off after it is lodged. For this Reason also, Persons who have the Quantity of this *Serum* increased, are dull and unactive, because the Glands and Vessels of the Brain being weak and dilatable, they will sustain a great Share of the Load, which distends the Blood Vessels, and compresses the Roots of the Nerves. Hence there is neither so much animal Juices separated from the Blood, nor is its Influx into the Nerves and Muscles so free, so that they become resty, sluggish and inactive: But the Spirits being kept undulating in the Brain, they cause Anxiety, Restlessness, shorter disturbed Sleeps, and being sent off into the Nerves of involuntary Motion, the Heart is invigorated, the Action of its Muscles is increased; hence a quick Pulse and Heat. Now in all these Disorders, *Green Tea* attenuates the Blood, gently pricks the Vessels, increases or raises their *Momentum* against the Fluids, helps to restore their natural Fluidity; and homogene Mixtures, for tho' in a weakened State of Digestion, our Aliments be changed into a kind of Fluid, yet the Attrition or Attenuation of the Chyle is not sufficient to make it of due Mixture and Consistence, with a healthy Blood; therefore will its grosser Particles readily separate again from it, whenever the Strength and Velocity wherewith it was expell'd the Heart, turns weak; and this will be the Case of the Glands about the Head, which are both numerous and weakly fenced: But *Tea* strengthening the *Viscera*, promoting Digestion, Circulation and Secretion, will help the Vessels to attenuate and assimilate the Chyle to the Blood, and prevent the Attraction and Lodgment of its grosser Parts in these Glands; whose Coats being also corrugated and invigorated by the gentle Pungency of its Salt, and Astringency of its Earth, will give a more sensible Resistance to the Blood's *Impetus*, and prevent the Reception of too large a Quantity: Hence less *Serum* will be strained off, and the Rheums and Catarrhs helped or healed[†].

Where Perspiration is too great, the Force of the Fibres and Vessels too strong, the Circulation rapid, the Blood ground down, and the Body always lean and thin, *Bohea Tea* is very serviceable, because it adds much fresh Sulphur, or fine Oil to the Juices, which lubricates, softens and relaxes the Fibres and Vessels, prevents or diminishes their too great elastic Force, Dryness and Crispness, lessens the immoderate Expence of the

Bohea Tea useful, 1. In a constant lean Habit of Body, from a too plentiful Perspiration.

[†] Those employed in the *Dutch Embassy* to *China*, observ'd that the *Chinese* spit very little, and are rarely afflicted with the Gout or Stone, which their Physicians impute to the liberal Use of *Tea*. *Tom. 3. Philos. Transf. N°. 14.*

the Fluids by the Skin; the Solids act not with so great Celerity and Force, the Blood's Circuit therefore is not so rapid, nor its Parts so quickly attenuated or expell'd, and hence the Body is better nourished^u.

^{2.}
In spitting of
Blood.

In Spitting of Blood, whether it be from the Delicacy and Tenderneſs of the Pulmonary or Bronchial Veſſels, or the Force, Velocity or Acrimony of the Humours, which (if not hereditary) is moſtly the Effect of an indiſcreet Uſe of hot, aromatick, ſaline or animal Food, ſtrong Exerciſe, eſpecially of the Lungs, by coughing, ſinging, playing, ſhouting, or much and loud ſpeaking, too much Freedom with ſpirituſous Liquors, violent and frequent Paſſions of the Mind, Suppreſſion of uſual and neceſſary Evacuations; theſe, or whatever elſe may increaſe the Quantity, Acrimony or Velocity of the Blood, and withal determine the ſame to the Lungs, with a Force ſuperior to their Reſiſtance: Here, after diminiſhing the Blood's Quantity, and labouring to reunite the ruptur'd Veſſel or Veſſels, we ſhould correct the Rapidity, Heat and Acrimony of the Humours, by the Uſe of emollient Baſamicks; which Title *Bohea Tea* challenges, ſeeing it abounds with Oil^x, which nouriſhes much, checks the Stimulation, and blunts the Acrimony of the Salts, and repleniſhes the Blood with healing baſamick Parts. In this Caſe it muſt be drunk pretty ſtrong, with very coarſe Sugar, to five or ſix Diſhes in a Morning, and three or four in the Afternoon, with two Tea Spoonfuls of thick Cream, and the Yolk of an Egg in every Diſh^z.

This.

^u Theſe Effects of the *Bohea Tea* are not ſo much owing to either the Quantity, Smoothneſs, or Fineneſs of the Sulphur, as 1. To the ſmall Quantity of indiſcoverable Acid reſiding ſtill in the Leaf, and drawn off in Infuſion; for in all theſe rapid Motions of the Blood, and too great Strength and elaiſtick Force of the Veſſels, there's a ſecret acrid Salt, ſtimulating the Solids, and fuſing the Fluids; and 2. To the ſmaller Cohesion of its Earth and Oil, which makes it leſs Aſtringent, or fit for adding Bulk and Firmneſs to the Veſſels^{themiſelves}, whereby they may become more elaiſtick. 3. To the Loofeneſs or Spongineſs of the Earth, whereby it acts after the Manner of a lower abſorbent in ſheathing ſome acrid Particles. 4. To its retaining a greater narcotick Quality than the *Green*; hence 'tis a kind of ſmall Opiate to the Body.

* Not that *Bohea* contains a larger Quantity of Oil than *Green Tea*, for Reaſon

and Experiments prove the contrary, but its Oil is more ſeparable, leſs attached to its Earth, and therefore comes off more freely in a ſhorter Time; and becauſe it is leſs aſtringent, it raiſes not ſuch a Contraction of the Veſſels, nor ſo quick a throwing about of the Blood in the Body, gives the nutritive Juices a better Opportunity of Application and Appoſition to the Sides of the Veſſels, which is Nutrition.

^z The Yolk of an Egg, with a Tea Cup full of Cream, and, if Circumſtance and Convenience will allow, two Drops of Oil of Cinnamon added, will make an exceeding good Mixture, ſufficient to ſerve two or three People to mix with their *Tea*, for Cream being chiefly the Oil of the Milk, and the Yolk the moſt nutritive Part of the Egg, they are both lubricating and nourishing: The Oil is a ſingular good Cordial and Strengtheners.

This may also be of Service in Ulcers and Abscesses of the Lungs, with Difficulty of Breathing, a dry frequent Cough, especially after Eating or Motion, often returning Fits of a Hectick Fever, great Anxiety towards the Evening, and Night Sweats: Here *Bohea Tea* used as above prevents the Abscess or Ulcer from increasing, and defends the Blood from the purulent Matter mixing with it, for it easily and readily passes the Lungs, without forming new Obstructions near the impostumated or ulcerated Parts; its vulnerary and balsamick Particles correct and soften the acrimonious Humours, and hinder their Putrefaction. It is also somewhat diuretick, and assists in determining the Humours that Way to the Relief of the Lungs, and makes the Expectoration of the purulent Matter more easy.

3.
In Ulcers or Abscesses of the Lungs.

In Obstructions of the Lungs occasion'd by a Viscidity of Humours, from too great Heat and Motion, (which is discoverable from a Contractedness of the Fibres, a stronger and quicker Pulse, and Urine of a higher Colour) or the drinking of spirituous Liquors, profuse Sweats, being exposed to cold frosty Weather, North and East Winds, which diminish Perspiration, determine the Humours to the Lungs, and make their Vessels narrower, or obstruct them; or they have had cutaneous Eruptions, which by the Viscidity of the Fluids, and Contraction of the perspirable Vessels, are retir'd and fallen on the Lungs, and increase the Quantity, Heat, Motion, and Acrimony of the Humours; and by the increased Heat and Pressure of the Vessels on them, are compacted and press'd together, adhere with a larger Surface, and so have Globules larger than the Capacity of the transmitting Vessels. Here, after Bleeding and gentle Purging, the Use of *Bohea Tea*, of a middle Strength, and drunk freely, as above, dilutes and dissolves these Humours, not without some Detergency of the Vessels. How Detergents act, see under that Head upon *Sage*.

4.
In Obstructions of the Lungs from a Viscidity of Humours caused by too great Heat or Motion.

In a violent laborious Cough which abrades the Insides of the Windpipe, takes off its lubricating defending *Mucus*, whereby it's quickly irritated by the cold Air, or by the Sharpness of the glandular Humour there separated. Here oily Medicines^z often relax the Stomach, increase the Viscidity of the Humours, relax the Glands, and lessen their Resistance of the Humours thrown upon them. In this Case *Bohea Tea* affords a fine Oil and balsamick Particles, which relaxes not the Coats of the Glands, nor turns the Blood rancid; and therefore is a good Morning Diet, and Afternoon Diluter, if it affects not the Nerves.

5.
In a violent Tickling, laborious Cough, from the Sharpness of the Serum.

H 2

In

^z *Viz.* Coarse Oils not only relax the Stomach, but they are apt to grow rancid, thicken the Blood, and stimulate the Vessels more, and increase the Cough.

6.
In Pleuritick
Affections.

In Pleuritick or Peripneumonick Disorders, or Pains in the Sides, from a Distention of the Pulmonary or Pleuritick Vessels with a sily Blood, such as cannot down with Linseed or Mallow *Tea*, may find a proper *Succedaneum* in this, seeing it dilutes and attenuates the Blood, and softens the rigid Vessels, so as the gross Particles may pass. Thus I have thrown the chief Uses of *Bohea Tea* together; and to these I might add its Fitness in Ulcers and Abscesses of the Reins and Bladder, where stimulating Medicines are improper, and only Lubricators fit: But I hasten forward.

In Obstructi-
ons of the
Lungs, from
viscid Blood,
and weak
Vessels.

In Obstructions of the Lungs, owing to the Viscidity of the Humours from their too slow Motion, discoverable from a soft flaccid Habit of Body, a weak slow Pulse, a languid Circulation, pale Urine and no Thirst, as resolving of the impacted Humours, and attenuating the viscid, and invigorating their Motion, are necessary here. *Green Tea* drunk strong, and twice a Day, in a moderate Quantity, viz. three Dishes in a Morning, and two or three in an Afternoon, with double refined Sugar, stimulates the Vessels, resolves the Humours, increases the Blood's Motion, Perspiration and Secretion.

In Inappeten-
cy and Indi-
gestion.

In want of Appetite and Indigestion, from much Slime lining the Inside of the Stomach, and palling it, or from a feeble and languid Action of its muscular Coats, or from want of animal Juice to inflate and invigorate its Nerves, or from loading it with Food of hard Digestion, or from much oily Acrimony lodged in it, the dietetick Use of *Green Tea* is of the greatest Service; for it thins and washes down the Slime out of the Stomach into the Intestines, and hastens its Evacuation, and the rest by Urine and Perspiration; it gently and insensibly stimulates the Fibres, and by opening Obstructions of the Brain, clearing its Passages, accelerating the Motion of the Fluids, promoting an increased Secretion of animal Spirits there, these inflate and invigorate the Nerves of the Stomach, raise up and remove the Sluggishness of the Action of its muscular Coats: Then small *Tea* loosens the Food of hard Digestion, and promotes the Separation and Attrition of its Parts. The *Tartars*, who feed much on raw Flesh, are very sensible of this Effect; for if their Diet oppresses the Stomach, they quickly run to *Tea*, and find their Relief in it, as it takes off their Faintness and strengthens them. *Le Compte* tells us, p. 22. that the Infusion of *Tea* will soften Flesh, and make

* *Riedlin. Lin. Medic. Ann.* 4th 1698. gives us the History of a Man aged forty Years, of a very thin and phthysical Habit of Body, the Son of a consumptive

Father, who by plentiful Drinking of *Tea*, was restored to a more healthy and bulky Habit.

make hard Meat tender ^b, which if 'tis true, 'tis plain it promotes Digestion and the Dissolution of the Food, as well by restoring the natural Fluidity of our Juices, as gently astringing the Tone of our Bowels and Vessels by its fine saline Particles. And since many chronick Diseases arise from a Diminution of Digestion in the first, second and third digestive Powers, from how many Diseases may we rationally expect Exemption, by a moderate and discreet Use of this Liquor?

After *Crapula's*, or Surfeits of either Wine or Malt Liquors ^c, which ^{In Surfeits.} have left much adhesive *Mucus*, or saline Particles in the Stomach, Bowels and Vessels, or the Quantity of the Liquor drunk has distended the Vessels beyond their Tone, or left its Salts fix'd in the Coats of the delicate Tubes, or loaded the Vessels of the Brain, or secretory Ducts of the Skin with a tough Slime, which either straitens or obstructs them; hence Pain or Swimmings of the Head, Dulness, Heaviness, Belchings and Oppression of the Body, Fulness and Loathing of Food; in all these Disorders, the good Effects of *Green Tea* is no less sensible than visible; it washes off that palling oppressive Load of Slime from the Stomach, dilutes the whole Mass of Blood, clears the Canals of the Brain, and milliary Ducts of the Skin, invigorates the flaccid Vessels and Solids, and restores them to their proper and respective Uses, soon lightens the Body of its Load, and procures the Evacuation of those hurtful and superfluous Juices.

In delicate and tender Stomachs, which either from the Thinness, or A safe Vomiting. Abrasion of the *Tunica villosa* by spirituous Liquors, or the exquisite Sensibility of the nervous Coat, cannot bear rough, harsh or nauseous Doses, no Vomit is more safe and suitable; for it cleanses the Stomach from its oppressive Load of Slime, and leaves a gentle Restraining-gency

^b *Novemb.* 18. I took half an Ounce of the muscular Part of a Loin of Mutton cut small, and divided into two equal Parts, and put them into two Phial Glasses; on the first I pour'd two Ounces of tepid *Green Tea*, on the second two Ounces of tepid Water; when they had stood six Hours before the Fire, in a Heat equal to that of the Blood, and the Heat reflected on that Side furthest from the Fire, by a bright Fender, the first turn'd of a brown Colour, like strong *Bohea Tea*, the second was clear as before; and tho' it was hard Frost all the while, yet on the fifth Day they were both exceeding fetid, tho' that with Water was most so,

firm and of a pale Colour; that with *Green Tea* was next Day of a deep red Tincture, then of a pale brown; when both were pour'd out, the Flesh in the *Tea* had lost forty Grains, that in Water thirty six. But the Colour of the Liquor on the first, plainly shew'd that this Diminution of Weight was from the Dilution and Extraction of the Fluids contained in the Meat, and not from the Dissolution of its Substance or Solids.

^c 'Tis also the Custom with some to drink *Tea* before they go to the Tavern, to prevent Drunkenness. See *Nat. Hist. of Coffee, Tea, and Chocolate*, p. 10.

gency behind it, which prevents After-Nauseousness, purges up the Strainers, which were the Fountain of that Drain of irritating Juices, which made the Stomach quasy, sore, relaxed and belching.

Good in flatulent Cholicks.

In flatulent Cholicks, occasioned by a Laxness, a languid or diminished peristaltick Motion of the Guts, whereby some of the more gross and tenacious Parts of the perspirable Matter lies in the Bowels rarified, distends their Coats, turns sharp and pricks the Guts, *Green Tea* dilutes and prepares it for entering the Body, or passing along the intestinal Canal, to be expelled by an Exploſion; and at the same Time gently and pleasantly stimulates, and corrugates the Fibres, invigorates their decayed Tone by its Bitterness and Astringency, whereby they are capable to act with greater Force on the Contents, and drive them forward to their respective Outlets.

In bilious Cholicks.

In bilious Cholicks (which are often the most tedious, painful, and dangerous of all others) very small *Green Tea* thins the Bile, (but Chicken Broth in the Fit is infinitely preferable) carries it down, and delivers the Body from the Rack for the present, and by its Salts scours the Glands and excretory Ducts of the Liver from that Heap of Bile which lodges in them, and at the same Time, by its Roughness and Restrictingency, whereby it draws up the Fibres, and gives them a better Tension, it contracts and shortens the Diameters of the dilated biliary Strainers, and so diminishes a too copious Secretion of Bile.

In nephritick Cholicks.

In nephritick Pains, from Stone, Gravel, or a mucillaginous Collection of Matter, I shall explain its Usefulness afterwards. — Its Friendliness to the Nerves, which I have already accounted for, makes it advantageous in Hysterick Cholicks.

And hysterick Cholicks.

In Obstructions of the Bowels.

In Obstructions of the Liver, Spleen, Pancreas, and others of the abdominal *Viscera*, *Green Tea* is most valuable; for the warm Water, wherein it is infused, thinning the Blood, and resolving the close impacted, and compressed obstructing Matter, its Salts and pungent Particles will separate and dissolve those Cohesions, whether mucous, purulent, steatomatous or viscid Serum, open and clean the Vessels, increase or recover their weakened Tone, lay open their narrowed or obstructed Tubes, to the fresh and duly mixed circulating Fluid, to which the Salts of the *Tea* have added a greater *Momentum*. For in those Obstructions the Vessels are straitned or shut up, so as to resist the Fluids, and prevent their free Passage along them, or totally oppose their Entrance. — This Narrowness of the Vessels arises either from an increased Contraction by whatever adds to their elastick Force, so as they will not give way to the Power of the Fluids, or from a Distention of the lateral Vessels, which constitute the Sides of the largest ones; the more distended the

Causes of Obstructions explain'd.

first

first are, the more Space they take up and thicken the last, so as to shorten the Diameters of their Cavity. But Obstructions may and do often happen in healthy Vessels, either from too great a Viscidity or Fluidity of the Juices. Any thing renders the Fluids too viscid, and incapable of Circulation, which either changes their globular Figure into another, as it happens when the equal Pressure of the smallest Particles, which formerly acted and press'd equally together from all Sides, ceases; and this is the Case when the Motion is languid, or the Vessels relaxed, or the Quantity of the Fluid diminished. The Juices also become viscid, when the Attraction of any of their Principles becomes too strong, so as several Particles run into one, which comes to pass by too much Rest, whereby the Fibres become inactive, resty and relaxed; or by intense cold, which thickens the Blood, &c. Too great a Fluidity of the Blood generates Obstructions, because its globular Parts are very much divided into lesser Particles, which find easy Admission into the dilated Mouths of the small Vessels, but presently stick, and can neither react nor pass the extrem Part. Now these small Vessels are loosened, either by too great a Fulness, whereby their Resistance is diminished, or by an increased Motion, which throws a greater Load upon them than usual, or a Rarification of the Fluids, whereby their Particles being separated, they are disposed to enter a narrower Canal, or from a Relaxation of the Vessels themselves. — Now that *Green Tea* is serviceable in either a Viscidity of the Juices, or a Relaxation of the Solids, I have shewed already: But that it is also beneficial in Obstructions from too great a Fluidity of the Juices, remaineth to be prov'd. The Blood's Quantity being first diminished, this Liquor being drunk very small and warm, dilutes the grosser Globules of the rarified Blood, which had mistaken their Passage, and stopp'd after they had enter'd the dilated Mouths of the small Vessels; it increases their Motion thro' the Vessels, and the Action and Power of the Vessels over their contained Fluids, by its stimulating and astringing the Fibres. It is no less advantageous where several small Particles have run into one, and increased the Blood's Thickness, as in Colds, Idleness, or too great Heat, which dissipates the more fluid Parts of the Juices, and leaves the thicker and more dry behind; for its fine Salts stimulate the Vessels, its Roughness strengthens them, and both increase their Action, and cause an alternative Motion in them: And what appears something like a Paradox, 'tis also beneficial in too elastick or stiff Solids, because 'tis evident that the Cure of such a Vessel or Fibre indicates the plentiful Use of aqueous and tepid Drink, its Warmth softens, loosens and relaxes the Vessels, which makes way for the *Impetus* of the Fluids; the Liquor drunk increases the Blood's Quantity.

tity and its Resistance to the Solids, the Thinness of it enables the lymphatick Juices, wherewith 'tis mix'd, to pass and flow thro' the smallest pervious Vessels. But here it must be drunk freely, and very small; for if strong, its Roughness pricks the Vessels, and increases their Contractions, which is the chief Thing we have to guard against here; and therefore much Exercise and much Watching must be avoided. Thus I have accounted for the Usefulness of *Green Tea* in Obstructions of the Blood Vessels, which may produce Inflammations; and also in the obstructed and dilated lymphatick Arteries, which are follow'd by Corpulency, *Leucophlegmatia's*, and a Cachexy; and in the Glands phlegmatick Swellings, and in the smallest lymphatick Pains, without any visible Tumor. But *Tea* in the first Case must be drunk plentifully, and exceeding weak, in the other two, very strong and in small Quantities.

Good in the Hippo.

When the more thin and moveable Parts of the Blood are dissipated, and the gross and less moveable remain united, whereby it becomes thick, earthy, fat and black, or is the *atra bilis* of the Ancients; hinders and confounds Circulation, the several Secretions and Excretions, especially in the Spleen, Liver, Mesentery, Intestines and Pancreas, and all the other *Viscera* of the lower Belly, as is the Case of all hypochondriack Persons; then the Infusion of *Green Tea*, being thin and light, will dilute and resolve the thick, oily Parts of the Blood, soften or dilute its Acrimony, loosen the Vessels, and expel with a gentle *Stimulus*: The Matter lodged in the obstructed Bowels will become moveable, and may with Safety be gently driven out. But then it must be drunk in a Morning and Afternoon only, that it may not prevent Sleep, which is a chief Thing wanting here, and therefore must often be procured by a Paragorick Draught at Night ^d.

In the Stone.

In the Stone, which is a Collection of some earthy Parts of the Blood, and a little gross Salt cemented with a very ropy Mucilage, at the Ends of the smallest renal Arteries, in Shape of red Sand, and there gradually increase by the Accession, Accumulation and Adhesion of other earthy Parts from the Blood, in the strained off Urine, till it stop up the Duct, and increasing yet further, it compresses the rest, destroys the Use of the Kidneys, and compresses it, here a liquid, soft, thin and saline Diet of watry Drink, which may keep up the Circulation, dilute the Blood, lubricate, relax and expand the Vessels, and gently determine the Course of the Blood to the Kidneys, where so much Liquor may be strained off,

^d Riedlinus in his *Lin. Medic. Ann.* 3. 1698. tells us of a Woman in a deplorable hypochondriack Disorder, who, after an unprofitable and tedious Course of all other

Kinds of Medicines, was cured by drinking *Tea*; and how common is it to see languid Persons exhilarated by their Afternoon Regale of *Tea*?

off, as may wash out, and carry off these beginning earthy Concretions, and clear the Parts from this foreign and mischievous Lodgment, and drive it down into the Ureters and Bladder, so as to be discharged by Urine. Now *Green Tea* drunk plentifully twice a Day, but not too strong, answers all these valuable Intentions. We may find Abundance of Examples hereof among our selves, besides the Exemption of the Eastern Countries from the Agonies of this Disease by their free Use of this Liquor.

As *Tea* cleanses and strengthens the Vessels, restores the natural Consistence of their contained Fluids, and preserves or restores a due Circulation, wherein all the Fluids are made to pass their respective Strainers, it is therefore a good Cordial, cheers the Heart, revives and increases the Spirits, makes the Body light and lively, dispels those Clouds and that Drowsiness which hang over a lax Fibre, a languid Circulation, and loaded Vessels of the Brain, whereby the animal Spirits, being either not separated, or shut up in their Cell, and not propelled by the lively Pulsations of the Arteries upon the small Nerves, the Muscles flag and fall back, are lazy and inactive.

A good Cordial.

For the same Reason *Green Tea* is an Antidote against chronick Fear or Grief, wherein the Solids relax, and the Blood's Motion becomes languid, being ill prepared, and unfit to pass the Strainers, or afford due Nourishment. But to pass from these Diseases, chiefly confined to the Contents of the three Ventricles, let us take a Specimen of others, which affect the Body more universally.

An Antidote against the Effects of chronick Fear.

When the watry Parts of the Blood return not to, nor pass through the Veins, but stagnate in the extended Vessels, or shut up those which return the *Lympha* plentifully from the Cavities, and the Liquids already deposited in them are neither exhaled nor resorbed by the Veins, then are the Vessels either distended or broken. If in the first Case this *Lympha* stagnates, and is deposited over the whole Habit of the Body, it's called an *Anasarca*, *Upofarca*, or *Leucophlegmatia*; but if this viscid *Serum* be collected in any one particular Place, it has a respective Denomination: If in the Head, it is called *Hydrocephale*; if in the Forepart of the Neck, *Bronchocele*; in the Breast, *Empyema*; in the Belly, an *Ascites* or *Tympanites*, &c. Here *Green Tea* drunk strong and sparingly, (if no Vessels are broke and discharge their Liquor into some Cavity) revives the vital Strength, promotes the Circulation of the stagnant *Lympha*, quenches Thirst, forces Urine, thins and attenuates the Blood, stimulates, invigorates and scours the Vessels, increases Perspiration, Circulation and Secretion, moves the collected *Serum*, casts it back into the larger Vessels to be mix'd with the rest, and expelled at its proper Outlets.

In Dropsies.

lets. But if the Vessels be broke, *Tea* does more Mischief than Good.

In the Gout.

In the Gout, whose immediate Cause is a Vitiatio[n] of the nervous Vessels of the Body, and of the Liquor which they contain, and where-with they are nourished; for the Solids are contracted, become narrow, stiff and corrugated, and the Fluids are sharp and sily, therefore the extre[m] Parts suffer most here; for the Motion of the Fluids being slowest in them, they resist it the most, from the Contraction, Solidity, and Narrowness of the Vessels, and the Exercise and Weight of the pricking, thick, sily Liquor laid upon those Parts, through which it flows with most Difficulty; such are the *Perio[steu]m*, the Nerves and Membranes of the Parts at greatest Distance from the Heart. This Resistance of the Motion of the Fluids, diminishes the Velocity of their Course, and the Evacuation of their superfluous and noxious Particles: Hence they become still more defective by their Acrimony and Viscidity, press upon, distend, and pinch the Parts more, till the Violence of the Pain brings down a greater Afflux of Humours upon the pained Parts, which blunt the former, widen the Vessels, promote Perspiration thro' the Interstices of their Coats, and cause a Swelling. Here *Green Tea* thins and sweetens the Blood, prepares its corrupted Parts for Evacuation, prevents their Stagnation in the narrow Cells of the assigned Places, restores the decayed Vigour of the Vessels, shortens the Fit, and by a temperate Use of the Non-naturals prevent its Return. The *Chinese* and *Japanese*, who drink this Liquor much, are Strangers to the racking Pains of the Gout, Stone, and Rheumatism, which so frequently attack us *Europeans*, tho' the mountainous Parts of *Japan* are much colder than our Climate.

In the Scurvy.

In the Scurvy*, whose Cause is a peccant Constitution of the Blood, it being too thick in one Part, and too thin, sharp or salt in another, as is demonstrable from the Nature, and all the Symptoms and Effects of the Disease. And that *Green Tea* is an excellent Thinner of the Blood, has been sufficiently proved before; and that this Sharpness of the Blood is either acid, alkaline or oily, is undeniable; and that all these different Sharpnesses of the Blood, are either the Effects of a bad Digestion in the Body, or of irregular Living, or of unsuitable Food, I have fully proved in a former Discourse. But whatever is the Cause of this Distemper, Experience assures us, that strong Evacuations never fail to exasperate its Symptoms,

* *Tea* could be no great Friend to a scorbutick Body, if *Waldschmid's* Account of it held true; for he says, *Tea* mix'd with Milk hinders its curdling, cast what Acid soever you please into it. *Disput. Medic.* 8^{vo}. To try this, I

put three Spoonfuls of *Tea* to four Spoonfuls of new Milk, and added a Spoonful of Vinegar, the Milk instantly coagulated, and threw up a hard Curd at Top, leaving a fine clear Liquor below it.

Symptoms, and sometimes make it wholly incurable: Whereas, when we attempt the thinning the gross Humours, restoring Motion to the stagnant, separating the Cohesions, softening and blunting the saline, and rendering the too thin more compact, we are in a fair Way to succeed. Now a Diet of *Green Tea* is a great Softener and Thinner of a thick Blood, as is evident from the Quantity of Water wherein it is infused; and that its fine attenuating, gently pungent Salts, do insensibly prick the tender Fibres, and invigorate their Action, is plain from its raising the Pulse: Thus the Solids act with greater Force over the stagnant Juices, (which at the same Time the Additions of the aqueous Particles of the Blood has softened) hereby they are moved, shaken, propell'd, and cast into the larger Channels, where they are mix'd with the circulating Mass, ground down, and in due Time expelled together with the other excrementitious Juices; and of whatsoever kind the reigning Acrimony of the Blood is, the thinning of the Blood dissolves the large Combinations of its saline or oily Parts, fits them for Circulation, Secretion and Evacuation, provided the Patient can keep to this Diet.

In intermitting Fevers^f, which acknowledge for their Cause a *Lentor* In intermitting Fevers. or Sizyness of the Blood, together with a lax Fibre and Vessel, a Diet of

^f *De Blegny in Febrium Medela efficaciam insigniter deprædicat, quibus Lewenhockii Febrem pariter Theæ potu profligantis Observationem (Van de Eyerstock, p. 17.) confirmat. Acta Erudit. Vol. 7. p. 49.*

Dan. Crugerus, in Miscel. Curios. Dec. 2. Ann. 4^{ti}. p. 141. is dubious, whether an excessive Use of *Tea*, as it palls the Stomach and Digestion, may not be a frequent Cause of tertian Fevers, saying, *Quæstio hic movetur, utrum ex potu Herbæ Theæ Febris hæc orta? Putabant enim quidam, Ventriculi Tonum nimis esse laxatum, acidum Ventriculi nimis propter Copiam Aquæ dilutum, unde Coctio non rite in Ventriculo hoc pituoso peracta, cruditatis prognata & Febris conciliata; quam litem dirimere nolui; sed hoc dixi, Certum jam esse potum Theæ febrem præcavere non potuisse, etiamsi effectum debitum præstiterit. — Neque ulli Auctor ero, ut potu Theæ largiori quotidiano indulgeat, qui Ventriculum habet pituosum, debilem; calidum innatum, debile.* And certainly thus far he is in the right, (whatever he means by his *callidum inna-*

tnm, a mere Sound, without any determinate Meaning as far as I know) that Persons of a lax, phlegmatick, and weak Habit of Body, cannot bear an excessive Use of weak, watry, tepid Liquors; but this is no Argument why a moderate Use of pretty strong *Green Tea*, and Exercise after it, may not be very serviceable to such Constitutions, since we find it an agreeable Astringent and Bitter; but we are satisfy'd that whatever has a diuretick Force in it, whereby it may lessen the too great, or growing Quantity of Serosity, and stimulate and invigorate the Vessels and Solids, dilute a Sisy, and restore a Texture to an attenuated Blood, must be serviceable in such a Habit; but *Green Tea* is possessed of all these Properties in a sensible Manner, and therefore how its moderate Use, and due Strength, should be hurtful here, is to me a Paradox. And as to its occasioning intermitting Fevers, I will not answer for its Excess; but take we *England* over, and we shall find that this Distemper attacks ten Ale Drinkers, for one that contents

of *Green Tea* is no less pleasant than useful, being a Thinner of a viscid Fluid, a Stimulator of a weak and distended Vessel, and to nice and delicate Palates may be a very good *Succedaneum* to Wormwood and Camomile Flower Infusion, which are the best known Specificks our Climate affords against this Illness.

In a thick,
moist, foggy
Air,

In thick, cloudy, moist, foggy Weather, or in low, fenny or watry Countries, *Green Tea*, drunk pretty strong, is of great Service; for by its Roughness and Stimulancy it draws up and encreases the elastick Power of the Fibres, which mostly in such Times and Places are relaxed, partly from the Diminution of the Elasticity of the Air mix'd with the Blood, which is in *Æquilibrio* with the external Air, or Atmosphere, whose Spring being broke, it takes up a larger Space in the Vessels; partly from the Distention of the Vessels with a larger Stock of Juices, accumulated in the Body from the Decrease of Perspiration, and other Evacuations. This *Pletthora* giving too great a Resistance to the Vessels, they act with less Force; the Circulation in the small Vessels is slower, the due Mixture of the Blood by a regular Motion is prevented, it first turns thinner, then its more fluid Parts being drained off, the remaining must be thick and sily. Hence Obstructions, Fevers continual and intermitting, Pleurisies, Squinzies, Rheumatick, Scorbutick or Cachectick Illnesses, &c. But here *Green Tea* by its watry Parts attenuates the Blood, by its Roughness increases the Tension of the Vessels, and by its Bitterness restores Perspiration, and eases Nature of some of the obstructing Matter, which lies in the cuticular Strainers, and their secretory Ducts, and at the same Time, it stimulates the Kidneys and causes a more copious Secretion of Urine. The same Reasons will recommend the Use of *Tea* in very warm Weather, when the Blood is rarified, the Vessels relaxed, and the secretory Ducts of the Skin are shut up by a viscid *Mucus*, which the weakened Vessels cannot propel without the Help of the cold Bath, and is therefore not an infrequent Cause of inflammatory Fevers, Pleurisies, Peripneumonies, &c.

In Epidemick
and Ende-
mick Diseases.

Infectious Diseases are either Endemick, wherein the same Disease affects many People from some peculiar Cause of the Countrey or Season, or Epidemick, which may over-run several Kingdoms at the same Time.

The

himself with a moderate Dish of *Tea*. And pass we next to what the Ancients called putrid Fevers, wherein there is a small, slow, uncertain Pulse, clear Urine, &c. from a general Relaxation of the nervous System, and a great Viscidity of the animal Juices; I believe that diluting

the Blood with small *Green Tea*, sometimes for ordinary Drink, before gentle Catharticks, and strong Epispasticks, might be more consonant with Theory, than the warm Regimen.

The saline *Effluvia* sent off from infected Bodies, mixing with, and hanging in

The first is often occasioned by some Alteration of the Season or Air, herein the Humours are either too sluggish and viscid, or too rapid and rarified in both Cases; they load the Vessels, especially the Capillaries, and distend them beyond their natural Tone, whereby their Resistance is weakned, and their contained Juices become first too watry, and then too fizy; and hence slow Fevers. Now whatever keeps up the Vigour of the Fibres and Vessels, preserves their Resistance in *Æquilibrio* with that of the Fluids, so as there is neither Accumulation nor Stagnation of them in the Vessels; and this a daily Diet of *Green Tea* offers very fair for, being both a Thinner of the Blood, and a gentle, yet powerful Rouzer of a sluggish Fibre. — As a pannick Fear often strikes the Minds of Men in Time of raging Epidemick Illnesses, which disposes their Bodies for Infection; so whatever prevents in a greater or lesser Degree the Effects of this Dread and Terror, must be of Benefit to the Body: But that *Tea* is serviceable in any chronick Fear, I have already shewn, and shall therefore spare a Repetition here.

Tea, if moderately drunk, and of a due Strength, is generally more serviceable to the fair Sex than to Men. Because Nature having framed them with a more lax and delicate Fibre, they are more liable to a *Plethora*, or Fulness of Juices; as also because they are more exempted from Exercise and hard Labour, than which nothing braces and gives the Fibres a greater Elasticity; and because they are less accustomed to drinking of Wine; whose Astringency corrugates the Fibres, and enables the Vessel to act with greater Briskness and Force, and so answers the same as moderate Labour.

More suitable
to Women
than Men.

As to the Seasons of the Year, these are very little regarded in Respect of Diet, when it can conveniently be come at; but the hot Weather in Summer, the foggy, cloudy and moist Weather in Winter, and after the Autumnal Equinox, being Times wherein our Juices are most liable to a *Lentor*, and our Bodies to an Abundance of Humours, from a relaxed State of the Solids, seem fittest for the Use of *Green Tea*, to keep our Juices thin, and our Fibres braced, that Circulation, Digestion, Secretion and Evacuations may be regularly and duly performed.

Good in very
hot Weather.

As to the Stages of Life, Manhood being the Noon-day of our Age, Accretion being then finished, our Vessels and Bodies at their full Growth, and in their greatest Vigour and Force, whereby the Digestions and Secretions

In what Sta-
ges of Life
'tis best.

in the Air, being received into the Bodies of the healthy, both in their Breath and Meat and Drink, taint the Blood, and produce the like Illness in them, except their Bodies are very strong, healthy

and vigorous, so as they perform all the Actions of Nature with Ease, Pleasure, and in due Time. How sound, healthful Persons are infected hereby, *Boerhave* and *Quincy* have explained at large.

cretions are best performed, seems to want Diluters and Stimulators least; therefore Childhood, Youth, and the Decline of Life, require these Things most; because in the two first Cases we are the most exposed to *Plethora's*, from the Provision Nature makes for our Growth, Nourishment and Evacuations; in the last, Circulation and Digestion are weaker, the Secretions grosser, and Evacuations begin to lessen, all which expose the Body to more gross and phlegmatick Humours; but old Age requires a warmer Liquor than *Tea*, viz. *Lac Senum*, or a Glass of generous Claret to revive and glad the Heart.

To what
Constitutions
most useful

The Constitutions to which it seems peculiarly adapted, are the Phlegmatick and Melancholy, because the Blood of the first is mostly liable to *Lentors* from the natural Laxness of their Fibres, and that of the last, to an earthy Thickness and Grossness, from the Strength, Firmness, and Stiffness of their Solids, which slowly but powerfully strains off the thinner Parts of the Blood, so as it often wants a Diluter; and a greater Relaxer we know not of than warm Water.

Its Strength
and Quantity
adapted to
sundry Con-
stitutions.

As to the Strength and Quantity that should be drunk, all phlegmatick, corpulent, cachectick, dropical People, with all those who have lax *Stamina*, whether hereditary or acquired, should drink it in small Quantity, not above two or three Dishes at most, and very strong, viz. about two *Tea* Spoonfulls of *Tea*, for three small Cups of its Infusion. Sanguine Persons should drink it weaker, but not in too large Quantities, since they are liable to a *Plethora*, which exposes them to inflammatory Diseases; tho' they are in least Danger from this of any thing they drink, three or four Dishes is a suitable Dose for them. Melancholy Temperaments may use it of a moderate Strength, and with more Freedom, viz. to four or five Dishes, seeing their Wire Fibres have such Force in grinding down and expelling the finer Parts of their Juices, so as their Blood is always black, thick and oily. Bilious People are to expect the least Profit from it of all others. I see nothing but Company and Fashion that can prevail with them to turn it to a daily Diet, seeing their Fibres are too elastick, their Blood too sharp, and their Perspiration too large; they especially should use Milk or Cream in a good Quantity, not forgetting Bread and Butter; *Tea* Drinking once a Day is sufficient for healthy temperate People, viz. in the Morning: But such, whose Quality, Business or Company often calls them to a generous Evening Glass, or a luxurious Diet, should wash the Stomach in the Afternoon, both to help Digestion, dilute the Chyle, and strengthen the Bowels.

The ill Ef-
fects of *Tea*.

Thus far of the good Effects of *Tea*, from which one would be apt to imagine it could do no Mischief. But daily Observation may satisfy us of

of the contrary: However I shall but briefly name a few, and conclude this Discourse, having already run out beyond my first Design.

Such as have very sensible and elastick Nerves, when they have drunk several Dishes of *Green Tea*, but especially of *Bohea*, are seized with a *Tremor*, or shaking, which is a wavering of their Nerves betwixt their Tone and Laxity, being now contracted, and then relaxed; which Motions immediately succeeding one another, against the Person's Will, are the true Cause of that Trembling, observed in several after drinking of *Tea*; for its Roughness and Restricting the Fibres, and causing them to contract, the continual and regular Influx of the nervous and arterial Juices is stopt, being sometimes absent and sometimes present; for when the Fibres are suddenly drawn up, the Resistance of the Sum of all their Ramifications is superior to the Heart's Force, or the Brains Propulsion of its nervous Juice; and while this Resistance is superior, the Influx is stopp'd, but upon the Remission of this sudden Contraction, the Fibres relax again, and the Tubes are filled, till the next Twitch gives them a Check again. In this Case, the frequent Use of *Green Tea*, especially if drunk strong, must occasion Impediments in the Circulation of Humours, and produce sundry Defects. But *Bohea Tea*, containing more narcotick Salts, as well as some astringent Oil and Earth, throws the Vessels into those convulsive Vibrations, betwixt the relaxing Power of the first, and the contracting Force of the last.

It causes Tremors in them that have very sensible and elastick Nerves.

In sharp serous Distillations upon the Wind-pipe or Lungs, causing frequent, laborious, tickling Coughs, or in convulsive Coughs, the Use of *Green Tea* is imprudent; for tho' it dilutes the sharp Humours, yet it pricks the Fibres, whereby they are irritated and contracted, the Vessels are made narrower, and more sensible of the Acrimony of the Blood, and hence the Cough is exasperated.

Bad in sharp Distillations.

In all Coughs, Asthma's, and Obstructions of the Lungs, from a Viscidity of the Juices, because of the Blood's *Lentor*, and the Weakness and Laxness of the Fibres, the Use of *Bohea Tea* is very culpable; seeing its Property is to lubricate, soften and smooth the Fibres with its oily and balsamick Parts; but this Case calls for Detergents, Attenuators, and Stimulators, which are the Properties of *Green Tea*.

In Obstructions of the Lungs from a Viscidity of the Juices.

In cachectick, dropical, and phlegmatick Cases, *Bohea Tea* may add to the Distempers, but can bring no Advantage to the Drinkers, who want a Liquor to invigorate their Solids, cleanse and rouse their Vessels, attenuate and diminish their Fluids by Secretion and Evacuation.

In dropical and cachectick Habits.

In Obstructions of the Liver, Spleen, Pancreas, or other Bowels, *Bohea Tea* is not to be allowed for Reasons just now given.

In Obstructions of the Liver, &c.

Upon Reco-
very from
long Fevers.

The Use of *Green Tea* is no less unadviseable upon Recovery from long and continued Fevers, which have wasted the Body, and shatter'd the Constitution; for here a restorative nourishing and balsamick Diet is indicated, and not Detergents, which, where they have no *Mucus* to cover them, diminish and wear the Vessels, which the Fever had worn out before.

In too great
a Sensibility
of the Stomach.

Where the Stomach is very weak, sensible and delicate, either from a constant Drain of Humours, which, by their lying in the secretory Ducts, are become sharp, and so prick the Stomach that its somewhat inflamed, or by the Abrasion of its mucous Coat, whereby its nervous Coat is exposed to the Touch of its Contents; or from the over Delicacy and Sensibility of the Nerves, and their Turgescence with nervous Juice, the Use of *Green Tea* is hurtful; for by its Roughness, it stimulates the nervous Coat, and causes the Stomach to contract and throw up its Contents.

It causes Cho-
licks.

In some fine Constitutions, where either the mucous Coat of the Bowels is very thin, or the Ramification of the Nerves very many, large, or exceeding sensible, *Green Tea*, especially if drunk strong, pricks the nervous Coats, and raises Cholick Pains and Gripes; but Instances of this kind, are rather owing to its being drunk too strong, than to the simple and moderate Use of this Liquor.

Dry Gripes.

In the dry Gripes, a Disease endemick, and often fatal in hot Countries, *Green Tea*, being both stimulant and restraining, must be pernicious; since this Disease is only to be treated with tepid, relaxing, and lubricating Things, as Chicken Broth, Oil of sweet Almonds, and Manna, or *Balsam Capivi*.

Bad to mea-
gre hectick
Bodies.

Neither is it adviseable to meagre Bodies, and thin Constitutions^h, for in this Case the Solids are an over-balance for the Fluids, their Perspiration is too large in Proportion to the Aliments they take in; therefore whatever thins the Blood more, and fits for a quicker Filtration through the cuticular Strainers; or whatever by a gentle Stimulation, or brisk Titulation, adds to the Force and Corrugation of the Fibres, must subtract from the weak Resistance of the Fluids: Now *Green Tea* does both in so high a Degree, that by an Indulgence of its frequent Use, its saline Parts must abrade and destroy the Substance of the Vessels, as well as subtilize the Humours, and thereby cause an Atrophy.

To inactive
and idle Per-
sons.

Those who lead an idle and sedentary Life should either drink little *Tea*, or have it strong, that it may, in some Degree, compensate their want

^h *Herm. Nic. Griminius, Obs.* 36. took notice in *India*, that the excessive Use of *Tea* threw several into an Atrophy and Diabetes.

want of Exercise, and preserve the due Motion and Fluidity of their Blood, which in this Case becomes first watry, and then by Rest, or exceeding slow Motion in the small Vessels, and the Percolation and Exhalation of its finer Parts, it turns sily, is apt to swell the Vessels, and foul the Glands.

But it's yet worse to such as work hard, or use much and strong Exercise, because both these raise the Tone of the Solids, and prepare and expel the Fluids rather in too great Plenty than otherwise; these therefore require a Liquor which elevates and nourishes at the same Time; whereas *Tea*, being diuretick and astringent, rather increases than diminishes their great Waste. To the more laborious.

Antonius de Heide, in *Holland*, observed, that the excessive Use of *Tea* had occasioned a very intense Coldness in the Stomach, and whole Abdomen of several, so as to cause a Shivering. — To all these I might add the common and pernicious Practice of drinking it daily with *Sal Volatile*, or Spirits of Hartshorn, whereby the Drinkers are in Danger of overfusing their Blood, inducing a Cachexy, and several obstinate Disorders. And to these may be applied what *Cruger* says, that *Tea* Drinkers are presently discoverable by their pale Countenance, and faint discolour'd Looks. — The Practice of some is still more ridiculous and surprising, who first drink *Tea* to wash their Stomachs, promote Digestion and thin the Blood, and then drink Wine, Drams, or volatile Spirits, to raise their Spirits, or prevent their flagging with *Tea*. But I cannot see the Force of Reason to justify either of those Practices.





A N

APPENDIX

CONTAINING A

DISSERTATION

O N

SAGE and WATER.



IS surprizing to see so many *Europeans* employed in a warm Enquiry into the Nature and Properties of *Tea*, and yet wholly overlook a domestick Herb, no less common than useful; I mean *Sage*, for which the *Chinese* formerly exchanged their *Tea*, admiring and preferring it as much to their own Shrub, as we do *that* to *Sage*; which thus supplanted itself in a manner, to make Room for our Acquaintance with the *Indian* Leaf. It must, doubtless, be allowed the only *English* Herb that has put in its Competition or Rivalship with this foreign Plant, and indeed seems preferable in several medical Intentions. *Orpheus*, *Veslingius* and *Ætius*, testify from their own Experience, that three or four Spoonfuls of *Sage* Juice drunk (especially with Honey) in a Morning, for several Days together, effectually stops a small Vomiting, or spitting of Blood: And they who have a shaking or trembling of their Hands, find Relief by washing pretty often for several Days, in an Infusion or Decoction of *Sage* in Wine: And what a pleasant Draught does

Why *Sage*
ought to be
spoken of
with *Tea*.

does its *Tea* make, mix'd with a little Lemon Juice in Fevers? And surely one would think in Inflammations, where Lubrication and Relaxation of the Vessels, and Attenuation of the Blood is indicated, we should prefer *Sage* to *Tea*, being less astringent, and better stored with volatile Particles. Besides, it's the Product of the same Earth, nourish'd in the same Climate, and expos'd to the same Vicissitudes of Seasons with our selves: And if these Considerations could not counterballance our Prejudice from the Commonness of it; yet they should so far recommend it, as to excite our Endeavours to restore and maintain its former Character Abroad, that we might at least continue the old Trade of bartering it for their Leaf.

Sage is called *Salvia a salvando, quia reddit homines incolumes & sanos*. *Agrippa* calls it *Herba sacra*, from the great Esteem the Ancients had for it. The *Greeks* call *Pig-Sage* ἑλελίσφακος, because of the Ash-colour'd, dry and scorched Deformity of its Leaves, for it naturally grows on dry parched Hills in hot Countries, ἐλελεῖν signifying to roll up and contract, and σφάκος blasting: But *Pena* thinks it rather deserves that Name, because of its singular Virtue in restoring the pined and withered Members of Mens Bodies. Some call it *Cor salvium*, reputed it an universal Heart-ease. *Pig-Sage* is also called *Sage Royal*, *Small Sage*, and *Sage of Virtue*. Many Persons breakfast on its Leaves with Bread and Butter in *May*, while they are young and tender; but when full grown, they gather and dry them for the Kitchen, or for *Tea*. The *Italians* admire this Herb so much, that they persuade themselves, if they eat *Sage* Leaves with a little Salt fasting, they are Proof against all Infection by poisonous Creatures, or Epidemick Diseases, and because they believe it possess'd of so many and great Virtues, 'tis said,

Eymology
of *Sage*.

Cur moriatur Homo, cui Salvia crescit in Horto?

Late Botanists^a have multiply'd this Herb into thirty different Species, thirteen whereof grow in most or all Countries of *Europe*, six come from *Crete* or *Candy*, two from *Samos*, six from the *East-Indies*, and two are Natives of *Spain*: But three only are commonly used amongst us, viz. Broad leaf'd white *Sage*, broad leaf'd red *Sage*, and *Pig-Sage*, or *Sage Royal*, whose Familiarity to every one will save me the Trouble of giving their Culture, Description and Difference.

The various
Sorts of *Sage*.

Some curious Persons having view'd *Sage* thro' a Microscope, have observed its whole Surface cover'd with small Filaments, like the most delicate

Microscopi-
cal Observa-
tion on *Sage*.

K 2

licate

^a *Tournefort's* compleat Herbal, p. 2.

licate Spider's Webs, wherein are Multitudes of very minute *Animalcula*^b, which seem to creep about it.

The Conceit of Toads and other venomous Creatures sheltering themselves under its Leaves and Roots, tho' more fabulous than true, yet made the Ancients so careful, that they never eat it in Salads unwashed; for the same Reason the *Italians*, either plant Rue near their *Sage*, or put them down together in the same Bed; hence that Verse,

Why *Sage* and
Rue planted
together.

Salvia cum Rutâ faciunt tibi Pocula tuta °.

However, I think it but a necessary Care that it should be wash'd, because its rough hairy Leaf is a very proper Receptacle of small Insects, and a good Nest for their Eggs, which by Negligence taken into our Bodies may animate and hatch there.

Ambrosè Parey^d tells us a dismal Story, (which probably strengthened the superstitious Opinion of the Vulgar, coming from so good Authority) of two Merchants, near the City of *Tholouse*, who walking in the Garden, till Dinner was ready, gathered some *Sage* Leaves, put them into their Wine unwash'd, and drank it; they were presently after seiz'd with a *Vertigo*, lost their Sight, fainted, vomited, were convulsed, their Tongues turn'd black, they had a terrifying Look, were all in a cold Sweat, their Bodies swell'd, and they died. The Innkeeper with his Family were hurried before the Magistrates and examined, but they truly and strenuously denied any Accession to, or Consciousness of the Poison, and said they had all eaten of the same Meat, and drunk of the same Drink, except some Wine, into which these two had put unwash'd *Sage* Leaves: A Physician was call'd, and asked whether *Sage* Leaves could poison? He desir'd to see the *Sage*, and at the Root of it he spied a Hole in the Earth, into which he caused boiling Water to be poured, and a whole Nest of Toads came crawling out °.

I shall

^b Miscell. Cur. Vol. 9. Obs. 163.

^c Schol. Salern. cap. 20.

^d Lib. 21. c. 24.

^e Granting the Truth of this Story, I should still be more suspicious of the Mischief from small Spiders, or their Eggs on the Leaves, than Toads at the Root: For, 1. I suppose it universally granted, that the Poison of Animals is more or less dangerous, as the Climate is hotter or colder, and *France* enjoys a much warmer Climate than we. 2. Tho' the Air be more tem-

perate, yet Spiders are not wholly harmless here; for I knew a Surgeon, who smoking his Pipe in his own Room, a small Spider lighted on his Hand and bit him, the Part presently turned red, and swell'd; he then cut it out, but his Hand swell'd still, and was exceeding painful, and in half an Hour a Fever succeeded. After he had applied a Cataplasm, he went to Bed, and took an Alexipharmick Bolus, but the Hand continued to swell upwards; then he set the Arm on his Elbow, and

I shall be very brief on this Subject, because it is of a longer and more universal Acquaintance in *Europe* than *Tea*; and also because *Franciscus Paulinus* has already favour'd the World with a very useful and elaborate Treatise on *Sage*: (printed at *Noremburg*, 1688. in 8^o.) He has divided it into four Sections, and each of these into sundry Chapters: In the first Section he gives us its sundry Names, Descriptions, Differences, Cultures, Qualities, Preparations and Uses. In the second, which he calls *Medico-chymica*, he lays open in three Parts, how it is serviceable in Diseases of the three Ventricles of the Body, *viz.* of the Head, Breast, and Belly; and reduces his Prescriptions of it to all Forms, as Infusions, Decoctions, Electuaries, Bolus's, Pills, Powders and Draughts. In the third, he accounts for its great Virtues in Fevers, and external Disorders, and plentifully supplies each Chapter and Section with various Forms of Prescriptions, borrow'd from other Physicians, or built on proper Observations. He says, where *Sage* grows naturally in great Plenty, there Diseases of the Head are most frequent; as tho' kind Nature had placed the Poison and its Antidote, the Disease and its Cure, next Door Neighbours. The last Section contains its Uses in Cookery,

The Author's Reason for writing briefly on it.

Sage, no doubt, consists of the same Principles as *Tea*, but their Modifications, Proportions and Bulks are very different; for 1. The smaller and looser Parts of thorough dried and well kept *Sage*, separable by a gentle Heat, in a quarter of an Hour's drying before a moderate Fire, are in a middle Proportion betwixt those of *Green* and *Bohea Tea*^f. 2. Its Salt and Oil are much more subtile and volatile^g, for in their

The Difference betwixt *Tea* and *Sage*.

Extraction

and stay'd up the Hand expanded to the Bed's Head, and lay in that Posture all Night; the Tumor turn'd and went off at his Finger's Ends; but he was confin'd to his Room three or four Days after. 3. Microscopes discover many of these Insects lodged in the *Sage* down.

^f *Green Tea*, *Bohea* and *Sage*, all dried in the same Degree of Heat, and the same Space of Time, one Dram of the first lost two Grains, a Dram of the second six Grains, a Dram of the third four Grains.

^g One Dram of broad leaf'd red *Sage*, infused three Weeks in two Ounces and a half of Spirits of Wine, (in a cold Room during the Frost and Snow) the Spirits pour'd off, and the *Sage* dried, it had lost twenty four Grains: The Tincture was of a beautiful green, and very thick; the

Liquor evaporated before a small Fire, at about two Feet Distance; I had six Grains of a very oily Extract, which flow'd before the Fire; here were eighteen Grains of volatile Oil and Salt lost. The dried Leaves smell'd very little of *Sage*; and tasted only of the Spirits; on them I pour'd half a Pint of boiling Water, let it stand forty eight Hours in a warm Room; and then poured off the Liquor, which smell'd faintly of *Sage*, was of a deep brown Tincture, and wholly tasteless. I dried the Leaf, and it had lost eleven Grains and a half more, *i. e.* it weigh'd twenty four Grains and a half; this Liquor exhaled, there remained six Grains of Salt and Earth, on which I poured warm Water, and filter'd it twice, then evaporated the Humidity, and three Grains of

of

Extraction in Spirits of Wine, few or none of the Parts of *Green Tea* are lost, or fly off in evaporating the Spirits, whereas near one third of *Sage* is lost, 'tis so volatile. 3. The Oil of *Sage*, stored up in its *Cel-lulæ pinguiferae*, exists in smaller Particles, is less attached and fixed to its Earth, and therefore as easily and fully extracted by an aqueous as spirituous Vehicle^h. 4. *Sage* contains no Resin, nor so much as a Gum constituted of *Mucus* and fix'd Oilⁱ. 5. The Perspiratory Ducts of *Sage* are

of brownish Salt remain'd. --- *Pig Sage* infused at the same Time with the other in Spirits, lost thirty five Grains, its Extract weighed eight Grains; when the Spirits were poured off, its Leaves were crisp: This *Sage* infused in boiling Water, the same Quantity and Space of Time, then taken out and dried, weighed scarce twenty two Grains. Its Salt and Earth left in the Water were six Grains, the Salt two Grains. Thus we see the *Pig Sage* contains more fixt Parts than red *Sage*, yet it communicates more of its Particles to the Water; for one Dram of red *Sage* contains eighteen Grains of volatile Oil and Salt, that is, near one third Part; but a Dram of the other only yielded seventeen Grains, tho' it lost a Grain more in the Infusion than the other. And whereas red *Sage* lost only eleven Grains and a half in Infusion in boiling Water, *Pig Sage* lost thirteen Grains. We see also that red *Sage* contains a third Part more fix'd Salt than the other: Hence its Colour arises from the greater Subtilty of its Parts, and Abundance of Salt.

^h I took of broad leaf'd red and white *Sage*, and *Sage* royal, of each two Drams, put them into sundry Tea Pots, pour'd boiling Water on them, and let them stand two Hours; then poured off the Liquor, and put on more boiling Water, and repeated it four or five Times, till they had stood twenty seven Hours; the red *Sage* taken out and dried, had lost thirty five Grains in the Infusion, the white forty eight Grains, *Sage* royal forty three. Then I took the Infusions of each Sort, (for I kept them separate) and boiled them over a slow Fire, till the Water was consumed.

From the Infusion of the red *Sage*, I had four Grains of Salt, and about eighteen of Earth; the Infusion of the white left nineteen Grains of Earth and Salt; tho' but about one and a half of the last. *Pig Sage* left nineteen Grains of Earth and Salt; when separated, there remain'd two Grains and a half of Salt, so exceeding penetrating, that it was next to corrosive, but would not ferment with acid Spirits: After the Phlegm was exhaled from the Salt and Earth of these Infusions, much Oil remained, which made the rest exceeding tough, and almost inseparable, and of a blue red Colour. --- I took these two hundred and twenty nine Grains of *Sage* Leaves, which had been infused and dried, and boil'd them in a Pint and quarter of Water, till three Parts were consumed; then pour'd it off, and boiled the same Leaves again in as much fresh Water as before; this last had neither Colour, Taste, nor Smell of *Sage*; then I took it out and dried it, and it had lost forty Grains more; I set the Liquor of these Decoctions on the Fire, till the Phlegm and Oil were exhaled, and there remained nine Grains of Earth and Salt, three and a half of which was a reddish brown Salt.

ⁱ I took one Scruple (*i. e.* twenty Grains) of this *Sage*, which had been first infused; then boiled, and put into one Ounce of rectified Spirits, and set it forty eight Hours before the Fire; it was scarce greenish, but rather white and muddy; then I poured off the Spirits and exhaled them, and there remained three Grains of a yellow coarse Dust, or *Mucus*; the Leaves dried had lost three Grains and a half;

are larger, and give Exit to a more free and copious Perspiration of its Parts. Hence, 1. *Tea* abounds more with a fix'd Oil than *Sage*; therefore

half; so that ten Times and a half three and a half, is about thirty six and a half, which taken from two hundred and twenty nine, one hundred and ninety two Grains and a half remain; which is all that remained of the three hundred and sixty Grains first put to Infusion. Now it is plain from this *Mucus*, that the Infusion and Decoction had extracted all the Oil from the *Sage*, which enter'd not into the Constitution of its Fibres, *i. e.* all the Oil laid up in its pinguiferous Tubes or Bladders. This proves that *Sage* has no Resin, nor indeed any such fix'd Oil as constitutes a Gum. After Infusion the Leaves smell'd strong of *Sage*, but not after Decoction. --- I burnt these one hundred ninety two Grains and a half of *Sage* to white Ashes, which weighed ten Grains, then pour'd warm Water on them, and evaporated the Water, a little white *Mucus* remained, but not a Grain of Salt; so that the Water had dissolved, and extract'd its saline Principles.

To try the Difference betwixt a hot and cold Infusion of *Sage*, in Spirits, I put two Scruples of it into two Ounces of rectified Spirits, and set them before the Fire thirteen Days, then pour'd off the Liquor on a Saucer, and exhal'd it before the Fire, there remained six Grains and a half of a fetid oily Extract, the Leaf dried and weighed had lost ten Grains. I infused this half Dram of the dried Leaves in half a Pint of boiling Water twenty four Hours; it tinctur'd it of a very deep brown Colour: The Leaf taken out and dried, and weighed again, had lost eight Grains more. Thus we see that the *Sage*, which stood five Weeks in the cold Infusion in Spirits, lost more than in the hot. --- Lastly, To see the Effects of *Sage Tea* upon the Blood, I took three Saucers, and pour'd upon each of them two Ounces of Blood, to the first of which I put two Spoonfuls of *Pig Sage Tea*; to the second, two Spoonfuls of the

broad leafed white; and to the third, two Spoonfuls of broad leafed red *Sage Tea*, and set them all Night in a cold Window; next Morning, the first had about half a Spoonful of *Serum* on its Surface, which was cover'd with a very thin Pellicle; the Liquor was black below the *Serum*, and red at Bottom; the second was thicker, blacker, had a stronger Pellicle at Top, and less *Serum*; the third had a thinner Pellicle, more *Serum*, and not so black, nor of so stiff a Consistence. Two Spoonfuls of *Green Tea*, to two Ounces of Blood, made the last much thinner and redder than any of these: Because *Sage* had communicated its whole Oil to this strong *Tea*, and Oil thickens extravasated Blood. --- Next I divided two Drams of a Muscle of a back Loin of Beef, into four Parts, their Length was five Inches; one I put into a Spoonful of *Green Tea*, another into a Spoonful of *Pig Sage Tea*, a third into a Spoonful of white, and a fourth into a Spoonful of broad leafed red *Sage Tea*, and let them stand forty eight Hours; that in the *Green Tea* was shrunk up most, *viz.* half an Inch, but stretched out two eighths of an Inch more; this *Tea* was turned of a whitish brown Colour; that in the *Pig Sage Tea* had shrunk up five eighths of an Inch, being only four, three eighths; and stretched to four, seven eighths and a half. That in the white *Sage Tea* was drawn up a quarter of an Inch, and stretched to five Inches; that in the red *Sage Tea* was only shrunk to four, seven eighths, and stretched to five Inches and one eighth: The whole when taken out, weighed ten Scruples and sixteen Grains, having gained four Scruples and sixteen Grains, which imbibed Liquor had expanded the Vessels, lengthened their Diameters, and shortened their Fibres. --- The Tinctures made by Copperas, Galls, and Spirit of Hartshorn, but especially the first upon *Sage Tea*, do also shew, that this Plant contains

fore it stands out the Winter Colds and Storms, when the other must languish. 2. *Sage* requires more Nourishment than *Tea*, because it perspires more. 3. Therefore *Tea* is less Aromatick in its Leaf, but of a more fragrant and agreeable Taste in Infusion. 4. Because the Oil and Earth of *Tea*, are more closely united and coherent, therefore 'tis a greater Astringent. 5. But *Sage*, containing much Spirit and volatile Parts, therefore this is a more immediate Invigorater of the Nerves, and sends a larger Supply into their imperceptible Tubes; but *Tea*, consisting of more fix'd and solid Parts, gives a more durable Strength and Elasticity to the Fibres; solid Particles enduring a stronger and longer Attrition before they be abraded, than light porous Corpuscles.

There are not only several very notable Differences betwixt *Tea* and *Sage*, but there is some Variation amongst the sundry Kinds of *Sage*, as you may see in the marginal Notes.

Sage a Cephalick and Nervous Plant.

The grateful, aromatick Smell and Taste of *Sage*, discover at once its aromatick and penetrating Parts, which make it useful in all nervous Disorders, as Palsies, Convulsions, sleepy Diseases, uterine Affections, or any Relaxation and Obstructions of the Nerves, especially where they proceed from a Thickness of the Blood, or its Viscidity, which make the Circulation sluggish in the Vessels of the *Meninges* and Brain, distend their Fibres, and so cause Pain or Dulness. Here the Parts of *Sage* being readily commiscible with the Blood, and carried with it into the Brain, accelerate its Motion, dissolve its gross or sily Substance, invigorate the Vessels, and so preserve or restore the Separation, and equal Distribution of the animal Spirits. Hence *Rulandus* wonderfully extols its Infusion in Wine, and with this one Medicine declares he has cured many Epilepticks. He makes *Sage* one Ingredient in his excellent stimulatory Powder in sleepy Diseases; so is it in *Tauvry's* sneezing Powders for Ulcers of the Nose, whether Venereal or other: And of *Sage* Juice

contains much finer and subtiler Parts than *Tea*; for as Copperas turns one blue, so it makes the other of a blackish Green Colour, because the different extracted Particles, which swim in *Tea*, having larger Surfaces, they refract, incurvate or change the Determination of the Rays of Light, for the greatest Refrangibility of Rays appears blue. This is further evident from Spirits of Hartshorn turning *Sage Tea* with Copperas of a dark red, and the Cup washings of a Purple, here the Rays being less refracted, change the Colour to a reddish Cast. It's also plain

from *Sage Tea* with Copperas depositing a less Sediment than *Bohea*: Now, because the Parts disengaged and extracted from *Tea* by warm Water, are very minute, (yet not so small as to afford a Spirit) therefore they exist more universally in the Liquor, and being opaque Particles they give the greater Refraction to the Rays: But tho' the Particles drawn off from *Sage* be really smaller, and in greater Divisions, yet are they so minute, that they refract the Rays less. --- For a fuller Analysis of *Sage*, you may consult Mr. *Bourdeline*.

Juice he makes a strong vulnerary Errhine, which at the same Time drains off much Serosity by the salival Glands. And that excellent practical Physician *Riverius* prescribes it very profusely in most Diseases of the Head, and in all Forms, as Powders, Decoctions, Infusions, Opiates, Errhines, Sternutatories, Gargles, Fumigations, Clysters, Fomentations, Cucupha's, Ointments, Liniments, &c.

Take we *Alexipharmicks* in that strict Sense, wherein they are said to prevent the Mischiefs occasioned by the Bites of poisonous Animals, then *Lenicerus* says, *Sage Wine*, or a Decoction of *Sage* in Wine expels all poisonous Infection, and also that of venomous Beasts, if the Decoction be drunk, and the Wound washed with it. *Antonius Mizaldus* prefers the Application of its fresh Leaves to the Wound: *Dioscorides* prescribes *Sage* as an Antidote against the Poison of the Sea Scorpion, and Sea Parsnip, & contra *Murenæ ictum*. *Gesnerus* and *Ægineba* order *Sage Wine*, or *Sage* in Wine, to prevent Mischiefs from the Sea-Dragon, & ad *Morsum Muris*. And *Petrus Aponensis* proposes it against the Fumes of Mercury. But these Gentlemen having left us unapprized of the Nature and Way of acting, both of these Poisons and their Antidote, we are excusable if we have Recourse to other Preservatives, whose Mechanism we are better acquainted with; for it's necessary that he who prescribes an Antidote, should know whether the Poison acts, 1. By relaxing the Solids, and rarifying the Fluids, as Opiates: Or, 2. By causing a violent Contraction and Convulsion of the Lungs, (besides its other Mischiefs) as Arsenick: Or, 3. By coagulating the Liquids, which all strong Acids do: Or, 4. By destroying the very Texture and Substance of the Vessels and Fibres, as *Mercurius sublimatus corrosivus*: Or, 5. Whether it acts by all the last three: Or, 6. By a particular Alteration of the Texture of the Mass of Blood, as in a *Hydrophybia*, and Epidemick Diseases: Or, lastly, by inspiring mineral Perfumes, or a thin watry Vapour loaded with such Particles, as, when united together, do compose solid and heavy Masses, will expel the Air out of the Lungs, and straiten the Passage of the Blood Vessels, by their too great Gravity, and stop the Circulation of the Blood, as is the Case with the Animals let down into the *Italian Grotta de Cani*.

As *Sage* aboundeth with Oil, it relaxes and dilates the renal Vessels. A Diuretick.
 2. The warm Water wherein it is infused, divides and dilutes the Blood.
 3. Its Salts stimulate the Coats of the Vessels, and make the Blood move more briskly: Hence *Sage* obtains a very considerable Place in the Class of Diureticks, and as such is serviceable where Serosities of the Blood abound, as in a Cachexy, Sluggishness of the Spirits, beginning Dropsy, and in Obstructions of the *Viscera* of the lower Belly, viz. of the Liver,
 L Spleen,

Spleen, Pancreas, Mesentery, Kidneys, *Uterus*, &c. And in Collections of Matter in the Breast, or falling and settling of Defluxions upon the Joints in a Jaundice, &c.

Atso. bent.

Sage affording a spongy, light, and porous Earth (especially if taken in Substance) sheaths the Asperities of sharp, corrosive Humours, and dries up superfluous Humidity, it's therefore a good Sweetner of the Blood, or Absorbent.

A Diaphoretick.

Having large Store of volatile Parts, they invigorate the Fibres, and rarify our Juices; hence is the Blood put into a brisker Motion, which disengages its Particles more from one another, (the warm Water wherein the *Sage* is infused, diluting the Juices at the same Time) and enables or fits them to pass the Skin more easily, and in larger Quantity: But if the different Attractions of the Blood be diminished, *i. e.* if its Particles happen to be less attached or united to one another, or if it abound with a greater Proportion of Serosity, than can easily pass the milliary Glands and excretory Ducts, these volatile Parts will cause not only a free and brisk Perspiration, but Sweating; the warm Water relaxing the Pores, while the subtile Parts fuse the Blood, and titulate the Vessels; but if the Skin be not disposed to relieve the Body of this Matter, then it is carried to the Kidneys, and proves diuretick: And of how great Service the preserving or restoring a due Perspiration or necessary *Diaphoresis* is, our own Experience and daily Observation on others, may sufficiently satisfy us. The Want of this often causes Colds, Coughs, Consumptions, Fevers, intermittent, continual, malignant and pestilential; Inflammations, bilious Loosenesses and Vomitings, Cholicks, Gout, Rheumatism, and several other Diseases both acute and chronick. But *Sage* being a Promoter of Secretion and Excretion, both by the Skin and Kidneys, may be justly termed an excellent Preventer of this black Catalogue of Distempers.

An Astringent.

Sage being thus Diuretick, Diaphoretick, and Sudorifick, thereby expelling the superfluous Serosities, and also absorbent, in drying up some Humidity, and sheathing the naked acrid Particles of the Blood, that they act not upon the containing Parts, it challenges the Name of a Restrictant, (tho' only such accidentally) and so is useful in Hemorrhages of Blood, occasioned from the Thinness and Sharpness of the Blood, and Weakness or Corrosion of the Vessels; and in watry Loosenesses, &c.

A Vulnerary.

Sage Tea Infusion or Decoction, being a thin, fine and soft Liquor, in which, neither acid Salts, nor acrid Oil are predominant. 2. *Sage* containing a *Mucus* or glutinous Earth, which is absorbent, and a bland Oil; the Water also, wherein it is infused, being a great Diluter, these either

either obtund or dissolve reigning Acids in the Blood Vessels, whether constituted of oleaginous, saline or terrestrious Particles. 3. This Infusion attenuating thick or gross Particles, the Chyle and all the animal Juices are made better, softer and thinner. 4. This is an equally diluting Diet, and also keeps up a regular Warmth in the whole Parts. Now where all these Things concur, they remove those Obstructions which prevent Secretion in the soft and tender Parts of our Bodies, that is, they beget a free Influx of Liquids into these Parts, and these Liquids being soft and glutinous (from the fine Oil and mucous Earth) find a free Passage into the smallest Vessels, whereby the Fibres are made capable of Extension by the Fluids; so as separated Vessels being thus extended, meet and unite again, and not only do they meet, but they are so interwoven, braced up and straitned, that nothing besides Sweat and perspirable Matter can pass their Pores or Interstices, after which they become dry, the Vessels being extended and united, the Exsudation or Efflux of their Fluids ceases. Now, whatever Vegetable consists of these Parts, and produces these Effects, is a Vulnerary; but *Sage*, infused in Water, or any thin, penetrating, diluting Liquor, being such, is justly term'd a Vulnerary, and as such has long, and is still continued the Basis both of Diet-Drinks, and Ointments, by many charitably disposed Women, and Countrey People, and these they keep as great *Nostrums* in the Cure of Wounds; but a better Acquaintance with the Vegetable Kingdom, wou'd provide them with many more Astringent and Vulnerary. But though strong Astringents may produce a *Callus* sooner, yet this notable Inconvenience often attends their Use in larger Wounds, especially of the membranous and nervous Parts, that the lately extended Fibres, being too closely braced up, they resist the necessary Exhalation of the perspirable Parts, which occasions a Difficulty of Motion in the Liquids about those Parts, and Perspiration is stopp'd or diminished; hence when the external Pressure of the Air is increased, that mix'd with Blood acting with a greater Elasticity upon those straitned Parts, exerts its Force in the more indilatable Tubes, and causes Pains; while at the same Time the increased Gravity of the Atmosphere presses more strongly upon them, but chiefly the Application of strong cicatrizing Medicines, as they leave a greater Scar, so they cause more intense Pains before Change of Weather, in Frosts, and Storms of Wind, especially Easterly, &c.

Detergents are very nearly allied to Vulneraries, for these are not only indued with such active Principles, and suitable Configuration of Particles, as dispose them and the Fluids in which they are mix'd, to Motion, and to attenuate and dissolve, if not abrade and carry along with them, into the larger Canals, such Adhesion as laid on the Insides of the

A Detergent.

small Vessels, and prevented their Nutrition and Invigoration, by lying betwixt them, and the truly nutritive Parts of the Blood, (which being small, are always confined to the Axis of the Vessels, where the Insides are lined with any *Lentor*.) But when this *Lentor* is attenuated and softened, they come with a mucous, softening, adhesive Substance, consisting of a comparatively larger Surface and Flexibility of its component Parts; this easily falls into Contact with, and cleaves to the attenuated, softened *Lentor*, whereby both are carry'd off, and the Vessels, Wounds or Ulcers are cleansed; after which, the adhesive Parts of the *Sage* (or other detergent Medicines) will readily stick to the Vessels and Fibres, and defend them from the *Mucus* of the Blood, till its fresh Current, in the small, wounded, lacerated, or ulcerated Tubes, supply the Place with good and proper Nourishment, 'till the Waste or Distance is made up, and the Parts healed. Now *Sage* is manifestly possess'd of those active attenuating and dissolving Particles, as we saw from the Exhalation of near three Parts of its Extraction in Spirits of Wine; it also abounds with very adhesive Particles, as was shewn from the Saponatiousness of the remaining Extract, and the Plenty of *Mucus* which rectified Spirits drew from the Leaves after their Infusion and Decoction. 'Tis plain then *Sage* is a Detergent; and for the same Reasons, an Ointment or Liniment of *Sage* will also be an external Detergent.

Pliny says, That *Sage* is both an Emmenagogick and Anti-emmenagogick, *i. e.* it provokes obstructed *Menses*, and also stops their overflowing. *Chesneau* says, that the great *Nostrum* used by the Court Ladies in the *Fluor albus*, is Powder of *Sage*, Sarsaparilla and Balauetine Flowers, of each a like Dose, two Drams every Morning for some Days. *Agrippa* says, where the *Uterus* of a Child-bearing Woman is too lax and cold, being loaded with slimy adhesive Humours, which prevent their Retention and Impregnation by the *Semen*, *Sage* eaten with Salt four Mornings together, abstaining in the mean time from the Husband, will certainly make them retentive, and remove Sterility; it also prevents threatned Abortions; therefore in *Cyprus* and *Egypt*, after a desolating Plague, the Women drunk *Sage* Juice to make them more fruitful, supposing the contagious Air had weakned their generative Parts. I might add many other uterine Disorders, wherein *Sage* has been, and is still accounted serviceable, but Brevity and Decency oblige me to pass them by; and only enquire what is necessary to constitute a Plant an uterine, and then see whether these Requisites are to be found in *Sage*. An Uterine must first remove such Obstructions as prevent the generating of good Blood, whether these Obstructions lie in the Stomach, Intestines, Mesentery or Blood Vessels. 2. It must promote the

the Generation of not only good, but Plenty of Blood in the Body. 3. It must sometimes tend to, or promote the Rarification of that Blood. 4. Where a *Lentor* prevails in the Blood, it must hasten the Attenuation, Dissolution and Evacuation of this *Lentor* or Viscidity by the Skin and Kidneys chiefly. 5. It must increase the Resistance of the Blood against the uterine Vessels, to promote their Rupture: And lastly, whatever produces the last two Effects, must be of a dissolving, stimulating, detergent, saponatious Nature. But I have already proved *Sage* to be a deobstruent, a stimulant and detergent, of a saponatious Nature, and by reason of its volatile Parts a Rarifier of the Blood: Therefore *Sage* is an uterine, tho' I don't say of the most certain and powerful Nature. — But why *Sage* should sometimes put a Stop to the menstrual Evacuation is, 1. When the Blood is too serous, and the Pores of the Skin too much lock'd up, so as the greater Load falls upon the uterine Vessels, which are destitute of the Assistance of Valves; here, whatever is a brisk Diaphoretick, attenuates the gross *Serum* of the Blood, and fits it to pass the secretory and excretory Passages there, and at the same Time clears these excretory Ducts of their *Mucus*, and invigorates these small Vessels for their proper Uses, must relieve the Machine of much inundating *Serum*; but *Sage* is demonstrably an excellent Diaphoretick: Therefore, 2. When the Blood abounds with acrid Particles, which corrode or keep open the ruptur'd Vessels, and cause an immoderate Discharge; whatever is an Absorbent of this acrid Humour, and a Diluter of the whole Mass, must act the Part of an Astringent; but *Sage* abounding with a mucous, gluey Earth, and a soft fine Oil is an Absorbent, and Sweetner of the Blood, as the Water wherein it is infused is a Diluter; therefore it very well in these Respects merits the Character of an Antimenagogick. On these Accounts *Matthiolum* commends the inward Use of *Sage*, in all Defluxions and Distillations of sharp Rheum on any Part, whether the Eyes, making them often drop involuntary briny Tears, or on the Glands of the Throat, Mouth or Lungs. — And as it is detergent, it's found often serviceable in Diseases of the Breast, for its Juice mixt with warm Water, and drunk in a Morning and Afternoon, cures a Hoarseness: And as it is an Absorbent and Diaphoretick, Wormwood and *Sage* taken together, in Substance, Infusion or Decoction, have been frequently observed to cure a Bloody-Flux.

Where the Stomach is lax, weak and unfit for Digestion, because of so much Slime or Phlegm, loading or palling it, Restringtons possess'd of volatile and tenacious Parts, which retrieve the true Tone of the Coats and Fibres, are useful, by absorbing some of that superfluous Humidity, and supplying the Solids with fresh Spirits; but *Sage* having these volatile Parts, together

A Stomachick.

gether with an absorbent *Mucus*, is a proper Stomachick, tho' inferior to *Green Tea* in its Astringency, yet superior to it in the Fineness and Subtily of Particles.

Simon Paulus says, He often prescribed to Countrey People in the Tooth-ach, with Success, a Decoction of a handful of *Sage* Leaves, Tobacco two Drams, Barley Meal a Pugil, boiled in Vinegar of Beer, to gargle the Mouth with frequently. *Mathiolus* applauds its inward and outward Use, not only in Diseases of the Head, from a Weakness of the Vessels, and Viscidity of the Blood; but in arthritick Pains. A Decoction of its Leaves in Wine, both for Drinking and Fomentation, is good to restore Paralytick Members; its Juice kills those Insects which either get into, or breed in the Ears. And as it's a great Strengtheners of the Nerves, 'tis accounted highly serviceable in Decays of the Memory, especially the Conserve of its Flowers. Its distilled Water, incinerated Salt, chymical Oil, and Conserve, were formerly all kept in the Shop, but now the two last are only retained, and seldom order'd, because little relied on. Some old Physicians say of *Sage*,

Schola Salern.

*Confortat Nervos, manuumque tremorem
Tollit, & ejus ope Febris. acuta fugit.
Salvia salvatrix, Naturæ conciliatrix.*

Explain'd.

It comforts the Nerves, being a warm Aromatick, abounding with volatile, and some adhesive Parts, which stimulate and cleanse the Vessels, actuate them with fresh Vigour, attenuate the Humours, and promote the thinning, carrying off, and discharging of what is sizy, and loads, relaxes, and diminishes the Circulation in the small Vessels, either of the Brain, or elsewhere; for the same Reason it's good in Tremors: It prevents acute Fevers, not only by keeping up or restoring the Tone of the Vessels, but by preventing or dissolving the Cohesions of the Juices, which lined and pall'd their containing Tubes. Because it's so friendly to the Nerves, they formerly made a Wine of it, which was highly valu'd in all Diseases of the Head, Brain and Nerves. They also used it in their Sauces, to excite the Appetite, promote Digestion, warm the Stomach, and help it to dislodge viscid, stagnating Humours; and to assist its more powerful Operation, in nervous Disorders, they joined to it Castor, Lavender, Tansy, Primrose and Nasturtium; and because it promotes Perspiration much, they commonly said,

Adde Rosæ Florem, minuuntq; potenter Amorem.

I should now proceed to give a Collection of several Forms of Prescriptions (whereof *Sage* is either the Basis, or a very considerable Ingredient) suited to a greater Number of Disorders, both internal and external,

nal, to which the human Body is subject; but I must remember, 'tis only an *Appendix* I am here proposing, and therefore, as most agreeable and consonant to this Design, I shall conclude with a few of the Inconveniencies attending the Use of *Sage*; for *Hoffman* justly observes, *suas etiam Qualitates habet noxias.* The Inconveniencies of Sage.

As cold Weather, foggy Air, and old Age, generally occasion Abundance of Phlegm and Siziness of the animal Juices, which indicate the Use of *Sage*, and *Sage Tea*, because it is full of volatile Parts, rarifies the Blood, is a Diaphoretick, and Reliever of the Body by a copious Perspiration; so these Things become Disadvantages, and either wholly forbid, or at least oblige us to a moderate Use of it in hot Weather, and also before, and at the Meridian of Youth; for then the Blood being rarified, (except made viscid by some Accident) whatever *supra Modum* increases this Rarification, may either destroy its Texture, or drive its dissolved globular Parts into the Lymphaticks, and so occasion Inflammations and Fevers. Bad in hot Weather, before and at the Meridian of Youth.

As marshy Countries, phlegmatick Constitutions, and lax Fibres, require Invigorators, Attenuaters, Diluters, and brisk Diaphoreticks, so a dry Air, cholerick and sanguine Constitutions, and a too corrugated Fibre, call for Things more emollient, absorbent and relaxing than *Sage*, or its *Tea*, except drunk very weak, and in a moderate Quantity with Lemon Juice. In a dry Air, to a cholerick, sanguine Constitution, and a corrugated Fibre.

As a stuffing of the cuticular or renal Strainers, with any Slime, *Mucus*, or other gross viscid Substance, indicates the Use of Attenuaters, Diluters, and Evacuators those Ways, so an Excess of those Evacuations oblige us to use Thickeners, Obtunders, and gentle Restringtons, and therefore forbid the Use of *Sage*, or its *Tea*. In extraordinary Evacuations, by the cuticular Strainers.

As in long or chronick Fears, Grief, or low Spiritedness, (wherein the Spirits, which should invigorate the Muscles, are spent on the Organs of the intellectual Faculty, and the Fibres relax and fall back, the Fluids also, through the Decay of the Resistance of the Solids, form different Cohesions and Combinations, and turn sify) the use of nervous, invigorating and volatile Things becomes necessary; so in sudden and violent Frights, strong Passions, or great and long Exercise, which contract, and sometimes convulse the Muscles and Vessels, whereby their contained Fluids are quickly and impetuously ground down, hurried forward and expell'd, Diluters, Emollients, slippery and anodyne Things are to be used, which take off the Corrugation, or rather Crispation of the Fibres, leave some *Mucus*, and soften the Fluids; but *Sage Tea*, especially if strong, being of a contrary Nature, is therefore unsafe, or at best can answer no valuable End. In sudden, violent Frights, strong Passions, and long Exercise.

In threaten'd
Abortions
from a *Plethora*.

In threaten'd Abortions from a *Plethora*, no Preparations of *Sage* are safe, because, though it be something Astringent, its rarifying the Blood with its volatile Parts, increases this Rarification, and makes the Case much worse; - and may certainly produce the Effects whereof we are afraid. Neither is it to be trusted in an excessive *Fluxus Menstruus* from the Thinness of the Blood. And *Sage* with Salt I am afraid will prove no Cure of Sterility from the same Cause, except its Force upon the Skin be superior to its *Impetus* on the Uterine Vessels.

I might mention more Cases, wherein the Use of *Sage* and *Sage Tea* is unadvisable, but flowing from the same Causes, tho' appearing in a different Manner, and receiving other Denominations, viz. a too great Thinness, Scarcity, or Rarification of the Blood, a too great Expence of the animal Fluids, a Stiffness, Rigidity, or too strong Resistance of the Solids, whether from Diet, Watchings, Fastings, hard Labour, great Evacuations, &c. they are deducible from the former Heads.

Water separates Salts or Spirits, from Oil or oily Bodies.

Since no Infusions or Decoctions of either *Tea* or *Sage*, are or can be made without *Water*, let us consider this a little; though I shall not enter a Detail of its Uses, either in the mechanical Arts, or Occasions of Life, nor in a chymical Light; only let me observe, that from the preceding Processes, we see it alone can separate Salts or Spirits from Oil, or oily Bodies, by attracting them to itself: For it dissolves all kinds of Salts, and incorporates them to itself, by their being insinuated between the void Interstices of the *Water*, and repelling the Particles of Air which lodge there. Hence dissolve we such a Quantity of *Salt* in any given aqueous Body, as fills up those whole Interstices. Then the Fluid can imbibe no more, nor dissolve any more Salts, though at the same Time the same Mixture shall dissolve Salts of another kind, their Particles being differently figured, and so capable of filling up, or finding a Place in the Vacancy left by the former. Thus may we dissolve several kinds of Salts in the same *Water*.

Dissolves all saline and saponaceous Bodies.

Water acts the same upon all saline Bodies, it being their constituent Character, that they are inflammable and dissolvable in *Water*. Thus *Water* may dissolve the most solid and ponderous Bodies (Metals not excepted) as far as they are reducible to Salts; it also dissolves all saponaceous Bodies, i. e. all Mixtures of Oil and alkaline Salts, and separates them. Now all the Humours in our Bodies plainly taste saline, though none of them are salt itself.

Dissolves Gums and gummous Bodies.

The Cause of all Fermentation and Putrefaction.

It also dissolves all Gums and gummous Bodies, it being their Character that they are dissolvable in *Water*. Fermentation without *Water* is impossible, *Water* alone can perform all Putrefactions. The Effervescence,

science, or intestinal Motion between contrary Salts, can only be excited by Means of *Water*. But it cannot act upon Resin, Oil and Sulphur; the first being only inspissated, or concentr'd Oil; the second consists of too large Particles, and those too much entangled by one another, to be disengaged by *Water*; nay *Water* repels it. Hence the Fat of our Bodies is not dissolved by this Vehicle, which rather seems to contribute to the Collection of animal Oil in the adipose *Cellulæ*: Hence the Reason of that Briskness, Activity and Health of the Bodies of *Water* Drinkers. Earth is the fourth Body indissoluble by *Water*, as it is incombustible by Fire. By *Water* alone we are able to direct and determine all Degrees of Heat.

Dissolves not Resin, Sulphur, Oil nor Earth.

Whatsoever *Water* is the most light, pure, transparent, simple, free from Taste and Smell, warms and cools soonest, has the best Colour, and wherein Herbs and Pulse infuse and boil soonest, is the best; and the Rain Water may really appear freest from all adventitious Mixtures, yet if you gather that which falls in a sultry hot Summer's Day, after a loud Thunder-clap, let it stand and settle, you shall find a real Salt sticking to the Bottom of the Vessel, from the infinite Kinds of heterogeneous Matter swimming in this vastly commoved Atmosphere^k.

Summer Water loaded with other Matter.

But

^k *August 27.* Being twenty five Days after the last Rain, and the preceding eleven last Days having been excessive hot, I infused one Dram of fine *Green Tea* in nine Ounces of boiling Pipe-water; let it stand eighty Minutes; then pour'd off the Liquor, and dried the Leaves, and it had lost only twenty one Grains, which is two Grains less than it lost in the same Pipe Water in the last Winter's Frost. *August 28.* Being a rainy Afternoon, and sultry hot, I gather'd a Pint of Rain Water in a new, clean Tin Pan, and boil'd ten Ounces of it in a close Tea Kettle, pour'd it on a Dram of the same *Green Tea*, let it stand three Hours, then pour'd off the Liquor, dried the Leaf, and weighed it, and it had lost only eleven Grains; from which subtract two Grains, and only nine remain, which is all that this *Water* had imbibed from the *Tea*, i. e. only one third Part, or near it, of what Winter Pipe Water had extracted from *Green Tea*. Then I weigh'd in Hydrostatick Scales the Liquor drawn off, and it had

not gain'd the hundredth Part of a Grain, being exactly the same with an equal Quantity of Pipe Water. Then I hoped to find the rest of the boiled Rain Water, lighter than the same Quantity of Pipe Water; but upon weighing both opposite to one another, there was not the least Difference. Here I was at a Loss to think, what was become of the nine Grains that the *Tea* had lost in the Infusion; then I imagined that the like Quantity of adventitious Matter contain'd in the Rain Water, might have penetrated and lodged in the Pores of the Leaves; so that the *Tea* had imbibed near as much as it had given out in the Infusion, for it was the worst tasted Liquor I had ever found of the Sort. To be further satisfied; the next Shower, the same Day, I set the Tin Pan dry under a very green Apple-tree, then weighed two Ounces of the Rain that dropped from the Leaves, and I found it two Grains heavier than the same Quantity of Pipe Water. Then

I ga-

Water never
found un-
mix'd with
other Matter.

But the Winter Rain has very little Alteration, especially if gather'd in Frost, when the Earth's condensed Surface has sealed up the Exhalations. But take even this pure Rain Water, filtre it a hundred Times, dry the Cap each Time, and you shall still observe an Encrease of Weight from the Adhesion of earthy and other heterogene Particles in the Paper. Hence Dr. *Boerhave* has just Reason to be convinced, that no Man ever yet saw a Drop of pure *Water*. All we can promise our selves is, that it be free from this or that sort of Matter; but that it be wholly deprived of Salt, is eternally impossible, seeing both Earth and Air abound with it.

Water the
most pene-
trating.

Water is the most penetrating of all Bodies next to Fire, and the hardest to be confined: It makes its Way through all Wood, and is only to be retained by Glass or Metals. Nay, by sufficient external Force it may even be express'd through the Pores of Gold, though the most compact of all Matter in our Orb. It is so fluid, that it consists of smaller Particles than Air it self, for Leather or Bladders confine the last; but the first is perpetually ouzing through them, till the whole is spent. Our Atmosphere still encreases its Gravity, as it approaches our Earth; and no Heat of the Sun can so rarify it, as to make the superincumbent Pillar either equal to, or heavier than its Basis. But the same Sun or Heat rarifies the *Water* into such minute Particles, as are specifically lighter than the Air, and are drawn up into Clouds at a great Distance. Hence it passes through the Pores and Parts of Animal Bodies, where the Air has no Access; as it moistens and dissolves the glutinous Matter hanging on the fine Fibres of the Membranes, renders them more pliable and distractile. Hence *Water* enters the Composition of all Bodies, Animal, Vegetable and Fossils, and is again readily separable from them; which cannot be said of Fire. This Property of *Water* joined to its Smoothness, makes it an excellent Vehicle for the fit and easy Conveyance of the nutritious Matter of all Bodies; seeing it never plugs up the Pores, but leaves Room for the following *Water*. Tho' *Water* seems so little cohesive, and separable from other Bodies, yet it will firmly attach and bind together the most solid Masses. *Water* mix'd with Earth, or Ashes baked by a vehement Heat, produce a Vessel, indissolvable by the most intense Degree of Heat. Neither is *Water* elastick; seeing it is incapable of being reduced to a lesser Compass.

Consists of
less Particles
than Air.

Separates Bo-
dies best.

And cements
most strongly.

Hence,

I gather'd two Ounces of the Rain Water of the second Shower (the first having sufficiently washed the Slate and Lead, from the Leaden Spout on the House Side) and it weighed half a Grain less

than the same Quantity of Pipe Water; so that the Leaves of the Apple-tree had increased the specifick Gravity of the Water two Grains and a half.

Hence, as to the Nature of *Water*, we may be allowed these *Corro-* Corollaries from these
laries, 1. Its Parts are infinitely small. 2. Exceeding smooth, free from Properties.
 all sensible Asperities. 3. Most solid. 4. Entirely Transparent. 5. Hard,
 Rigid, and Inflexible.

All animal Bodies are so contrived, that their Blood and Juices are in Why Drink
 continual Agitation, and the watry and spirituous Parts thereof in con- necessary to
 stant Dissipation, either by insensible or sensible Evacuations. Therefore preserve ani-
 was there a Necessity for the Reparation of this Loss, to prevent the mal Bodies.
 Destruction of the animal Oeconomy, which in this Case could only be
 preserved by Drink; therefore has wise Nature abundantly supplied us *Water* the best
 with *Water*, which is certainly most wholesome and agreeable to most Drink.
 Constitutions; and most suitably answers all the Intentions of a Potable.
 For though it nourishes not, yet is it the best Promoter of a healthy and
 lively Nutrition; and all other compound Drinks are only so far whole-
 some, as they are mix'd in sufficient Quantity with this. Nay, in Strict-
 ness and Propriety of Speech, Animals have no other Drink but *Water*.
 For all compound Liquors are either for Nourishment, Gratification of
 Taste, Luxury, or for some medicinal Intentions. Ale, Wine, and Spi-
 rits, are only a Jumble of Salt, Oyl and Earth, blended with *Water*;
 not one nor all of which three can answer any one, much less all the In-
 tentions of Drink, if separated from *Water*. For Salts crystallize, be-
 come hard and dry; Earth is apt to petrify, (witness the Stones in the
 Kidneys, Gall, Bladder, &c.) Oil coagulates our Juices, turns rancid,
 excites Thirst, prevents the Distribution of Nourishment in the Body, &c.
 It is only Earth that gives them Being, Form, Increase and Continuance;
 or in other Words, that keeps them up. Therefore *Pliny* ridicules the
 Humour of Mankind, which is at such Pains to prepare other Potables,
 since Nature has furnished us with one that is far more wholesome for
 common Use than any we can invent. For others are either taken in-
 discreetly, without Regard to the sundry Ages, Constitutions, Seasons,
 Sexes, different Ways of Life, &c. or they are drank to Excess. Thus
 far was necessary to premise before I preceded to the following Proposi-
 tions, which contain what I have here to add on *Water*.

Prop. 1. *Water of all other Liquors quenches Thirst the best.*

Prop. 2. *Water of all other Liquors promotes a true nutritious and
 healthy Digestion best.*

Prop. 3. *This of all other Liquors best makes up the Loss we continu-
 ally sustain of the moist and watry Parts of our Blood and Juices.*

Prop. 4. *The due Use of this in the Youth and Manhood of healthy
 Bodies, is the best way to attain a long and comfortable Life.*

In all which I consider *Water* only in a dietetick Light.

Why *Water*
quenches
Thirst best.

I. Thirst is occasioned either from a Thickness, Saltiness, or Sickness of the Blood, or the Increase of some other Evacuation, which calls for, or drains off too much of the serous Parts of the Blood; or lastly, from a Constriction of the Glands, or excretory Ducts, of the Mouth, Throat and Stomach. Now *Water*, from the Smallness of its Parts, the Solidity of its Particles, and the due Quantity drunk, thins the grumous or sily Blood, fills and expands the Vessels, (whereby together with its relaxing Power when warm) the secretory Ducts are opened; the adhesive Slime is diluted and wash'd off; the Orifices of their small Divisions are unlocked, way is made for the Ingress and Egress of the Fluids, whereby Secretions are performed, and *Saliva* produced, to moisten the Inside of the Mouth, Throat and Gullet; and all this done without leaving any *Stimulus* upon the Vessels, which may contract them, so as to lessen or hinder Secretion. Or if the Blood abounds with gross Salts, which, irritating the Parts, make the Vessels draw up, or shut up the secretory or excretory Ducts, and cause an Attrition, Heat, Dryness, or uneasy Sensation in those Parts; *Water* drinking (especially if its Cold be taken off) encreases the *Serum* of the Blood, helps to dissolve its Salts, keeps them at a greater Distance, hinders their Attraction till part of them is evacuated and spent, and their Quantity diminished.

The Excellency of *Water* in those Intentions is conspicuous in ardent Fevers, attended with intense Thirst, Blackness and Dryness of the Tongue, Mouth and Throat, from the Thickness and Incapacity of the Blood's Motion in the small Vessels. It's true, during the Fever, the Blood may be more rarified, whereby it's fitted to get into the small Conic Vessels, which it obstructs, and overpowers the propulsive Resistance of its containing Tubes, which at the same Time are stimulated and contracted by the Salts in the Blood: In the mean time both the Fever's Symptoms and Danger are increased: Now what can be better fitted to both, than a Drink which thins, cools, relaxes, dissolves, and increases the Quantity of the Juices, and promotes both Secretion and Excretion, which is only attained by a regular, more full and easy Circulation of better mix'd Fluids? And such a Drink is *Water* chiefly. The Truth of this is manifest and undeniable by those, who have any Sort of Acquaintance with the simple and successful Practice of the Ancients, who lived before that *Vulcan*, *Paracelsus*, who first introduced the hot Regimen in all Fevers, which proved fatal and mischievous, till the ingenuous and immortal *Sydenham* was sent of Heaven to check that Plague, and restore the temperate Course, with the imminent Danger of his own Life. A late *Novelist*, and most invective and satyrical Scribler (who

(who deserves no Name here) against the Use of *Water*, has with his own Pen prevented his whole Design, by confessing it was the Practice of all the Ancients, and begins with *Asclepiades*, who was Co-temporary with *Pompey the Great*; then he puts it to the Vote, *Drink Water or not*: And according to his own Scrutiny and Report, the Poll stands thus, *Yea's* 32, besides a Multitude of Pupils and others: *No's* 2, and himself. But finding himself outvoted, and that it's impossible for him to carry his Point this Way; he condemns and rejects the Ancients by the Lump, saying, *They are no Precedent for an Englishman, therefore they are of no Authority*. But his Passion falling, and being ashamed of this publick Assertion, he flies to another Shelter; and gathers up a Catalogue from *English Writers*, in what Cases *Water* is good or bad, but imprudently and blindly concludes with a vast Superiority in Favour of the first.

Let us next see how improper Ale, Wine or Spirits are for this Purpose. We often see, that Ale is so far from quenching Thirst, that it excites and increases it: 1. Because the Viscidities in the Liquor, being its lightest Parts, they will still be nearest the Sides of the containing Vessels, whilst the more fluid keeps the *Axis*, or middle: This Viscidity, especially in a rapid Motion of the Blood, lies between the Orifices of the small secretory Ducts, and the more moist and watry Part of the Blood; whereby the Secretion of the last will be exceedingly lessened: For in an accelerated Motion of the Blood, its thinner Parts will still be in the greater Vessels, where no Secretion is performed; but the Circulation being slower in the small Vessels, and its Viscidities still less disposed to Motion, and having the greatest Time and Advantage to attract one another, the greatest Bulk of them will lie in those small Vessels. — But all the Secretions being performed in those minute Tubes, and they sustaining the greatest Share and Load of those Viscidities, which lying nearest the internal Surfaces of the Vessels, and the Orifices of the secerning Tubes, therefore Secretion must be diminished; the Viscidity still increases, till there is not sufficient *Saliva* strained off to moisten and cool the Mouth, Throat and Stomach; and the little that is secerned, is only the thinnest Parts of the *Mucus*, express'd by the elastick Force and Action of the small and less complicated Glands, whereby the remaining Juice becomes thicker, more indisposed for Motion, obstructs the Vessels, and leaves a rough, slimy *Lentor* on them, which can only be wash'd off by Dilution, strong Exercise, or hard Labour. — Besides those Viscidities which chiefly consist of earthy Parts, there is the Salt of the Grain mix'd with those Liquors, which stimulates the Vessels: This Stimulation contracts them; the Contraction of their Sides shortens their Diameters; makes

Why Ale,
Wine, or Spi-
rits quench
not Thirst.

makes them narrower and less; whereby they act with a more forcible Resistance against their contained Fluid; drive the Viscidity and Salts further on into narrower Passages; strain off the thinner Parts, and leave the thicker, whether Earth or Salt, in the excretory Orifices, which hinder the Secretion of *Saliva*. 3. The Contraction of the Vessels, and rapid Motion of the Blood, hasten off its thinner and more separable Parts by Perspiration and Urine, but the grosser not being so easily attenuated and fitted for Discharge, continues in the Blood; and so much longer, by how much the purer Phlegm which should dilute it, is dissipated and spent; hence a Diminution of Secretion, and Increase of Thirst.

Wine is also far short of *Water* in our present Intention, *viz.* quenching Thirst. For the subtile and volatile Spirits of the Grape presently insinuate themselves into the Nerves, inflate and invigorate them; and all the Solids of the Body being only Sprigs of Nerves, must likewise be invigorated and endued with a greater Elasticity and Force; whereby they will act with a greater Strength over the Fluids, and encrease their Motion. But these Spirits being the smallest, finest, and most separable Parts of the Liquor, they will make their Escape first, and leave the Phlegm, gross Salt, and Oil of the Liquor, an inactive vapid Mass, encreasing the Blood's Quantity and Consistence. Hence the like Evils or Inconveniencies will follow, as we mentioned from the Use of Ale. It is true, good Wines have less Viscidity, gross Oil and Earth in them. But that is not to the present Purpose, when I am considering whether Wine or *Water* quench Thirst best.

Brandy and Spirits are still more unsuitable to this Intention, because if of a right Standard, nine Parts of them should be Spirit to seven of Phlegm; and I have shewed that these Spirits are readily dissipated, and in their Dissipation cannot quench but encrease Thirst, because as they are excerned by the Glands, they not only exhale themselves, but carry along with them that little Phlegm wherein they were entangled, and leave the Parts dry and parched. Besides, by their coagulating the Blood, and thickening the Juices, they increase Thirst. Their minute Salts at the same Time pricking and corrugating the Vessels. It is true, there are a few Cases wherein Brandy or Rum is preferable to *Water*, *viz.* either in a Dropsy, when other Fluids drunk in any Quantity encrease the Distemper, and hasten Death; or when a Man is very hot and thirsty, then a Dram comes seasonably before a Draught of Water; for warming the Stomach, it prevents the sudden Contraction of its Vessels, and their Retention of the more grumous and sily Blood; which without this Precaution would produce several Mischiefs, which frequently hap-

pen in hot Countries, where the fatal dry Gripes are Epidemick. We have too many Instances at home, where Water drinking, in this Case, occasions Coughs, Asthma's, Phthysis, Obstructions and Ulcerations of the Lungs or Liver, or cast the Person into a Fever. But 1. Spirits are not drunk here to quench Thirst, but to prevent the Mischiefs of a sudden Shock and Contraction of the Vessels from the *Water*. 2. These Things are not the Fault of the *Water*, but of the Person's unseasonable and excessive Use of it; but if *Water* drunk tepid and sparingly could be comply'd with, it would certainly quench the Thirst better, and with more Safety. It is true, the Brandy or Rum is also somewhat Diuretick, and hastens the Expulsion of some of the superfluous Fluids in the Body. Thus I have proved *Water* to be a better Quencher of Thirst, than either Ale, Wine or Spirits. *Q. E. D.*

Prop. 2. Another Intention indicating the Necessity of Drink is, to *assist Digestion*, as a Diluter of Food on the Stomach. Although other Drinks be Fluids, yet being mix'd with *Water*, they are still more fluid, *i. e.* their grosser Particles are separated at a greater Distance from one another. How *Water* promotes Digestion.

That a Diluter may become a Promoter of a free and full Digestion, it must have these Qualifications. 1. It must consist of the smallest Particles of any Potable. 2. These Particles must be separated from one another with the most Ease and least Force, *i. e.* their Particles must be of such a Figure, as that they may act with the smallest Attraction, and have the least Cohesion, and of all Figures, that of a Globular, has the Preference; because such have the smallest Contacts; and the attractive Force of Bodies is still in Proportion to the Largeness of the Points whereon they touch, and the Quantity of Matter they contain. 3. That its Particles be capable of a ready and easy Interposition, or Penetration into the Food on the Stomach. 4. That it constringe not, nor harden the Food wherewith it's mix'd. The Properties of a Diluter.

Now *Water* is possess'd of all those Conditions in the most eminent and excellent Manner beyond all other Fluids. Let us now see how *Water* does interpose, mix with, and dilute the Food on the Stomach; and this it does, 1. By the muscular Motion, and Action of the Stomach, Midriff, and Muscles of the lower Belly, tossing, pressing and grinding the Food on the Stomach, by which it's impell'd into its solid Parts. 2. By the Heat of the Stomach and adjacent Parts, warming and rarifying the Drink, whereby its Parts become smaller, and more separable, and are more easily forced into, and made to pierce our Aliments. 3. By the Rarification and Expansion of the Air, mix'd with the Food when warm'd: It swells, takes up more Space, makes the Food more porous, and How *Water* mixes with the Food in the Stomach.

and the rarify'd *Water* enters with greater Ease, and in more Plenty; so that *Water* has all the Requisites of a Diluter. It is of a very fluid and separable Nature, easily dispos'd to Motion, it is rarified by the Stomach's Heat; these contribute to its ready Mixture with, and powerful Penetration of the Food; after both which it still retains its Fluidity: By these it not only promotes Digestion on the Stomach, but in the Bowels and Body. For,

Advantage of
a well diluted
Chyle.

1. By the Motion of the voluntary Muscles this thin Chyle, diluted with *Water*, is easily and fully forced into the Mouths of the Lacteals. 2. A small Force being great when impress'd upon a Liquid of the smallest and most separable Parts; the *Water* dilutes any mucous Matter which may stick to the Insides of the delicate, thin, flexible Tubes, and the small solid Particles of the Food sweep it away when diluted, till it is cast into the thoracic Duct, *Subclavian Vein*, Heart and Lungs; where it is separated, divided, rendered more Fluid, fit for Motion, Circulation and Secretion, without causing Obstructions in the longer, more contorted and small Vessels. 3. By this Fluidity of the Chyle, its Fineness and Disposition to ready Motion, the Velocity of this Motion in the Body is accelerated, there being no Thickness, Grossness, nor Cohesion in the Blood, to procure a *Remora* or Stop, nor much Sluggishness requiring any great Force to overcome its Resistance.

How *Water*
attenuates.

Water not only promotes Digestion as a Diluter, but as an Attenuator of a gross, thick and fizy Mass of Blood in the Body, by insinuating or intruding itself into the Pores, and within the Attraction of the *Molecules*, or unhealthy Combinations of our Juices, and dividing and separating their gross Parts, thinning their thick and earthy, fitting them to pass the small Tubes, and to be cast back into the larger Vessels, mixt with the Blood, and evacuated by their proper Outlets: On this Account *Water* may be termed an Evacuator, which lessens the Tendency of the earthy, saline, or mucous Parts of the Blood to Cohesion; or remove such a Tendency where it's beginning, the Vessels being still vigorous, and exerting their full Resistance.

Whether
stronger Li-
quors be pro-
per Diluters.

Let us now enquire, how stronger Vehicles answer the Design of Digestion by Dilution; Wine, it's true, is a Diluter; but, at the same Time it's a Stimulator. Its Pungency arises first from its subtle Salt and Oil, which is its Spirit. 2. From its fixt Salt or Tartar, which continues longer in the Body, than the Spirits; gives a longer and more powerful *Stimulus*. Now as Wine stimulates and contracts the Fibres of the Stomach, so its Stipticity prevents the speedy and easy Attenuation, Separation and Dilution of the Meat there. 3. Although the Spirits of Ale, Wine, Beer and Brandy, may easily penetrate the Parts of our Food,

Food, yet promote they not, but retard Digestion, their Particles having a very strong attractive Force; whereby, when they have insinuated themselves into the Substance of our Food, they bring its Parts nearer to one another, thicken instead of rarifying, harden instead of dissolving it. This may be easily proved at pleasure. Let any two Persons of equal Health, Appetite and Digestion, dine upon Goose, Duck, Venison or Salmon, and each eat equal Quantities; let one drink clear, fine Table Beer, Water, or a little Wine in his Water, and the other drink Claret, or strong Beer, or Ale; the first shall digest his Dinner much sooner, easier, and have finer Chyle from it, than the latter. It's from this attractive Force in Spirits, that they preserve animal and vegetable Bodies so long from Putrefaction.

Whatever Digestion is performed by the Assistance of Wine, Ale, strong Beer or Brandy, is entirely owing to their watry Parts, and not, 1. To their Oils; for that begets Coagulations and Stagnations of the Blood, pals the Stomach, relaxes its Force, weakens its Fibres, renders its Orifices lax and glib, so as Meat passes the *Pylorus* crude, and scarce half digested; hence a ropy, thick and indigested Chyle. Nor, 2. Is it owing to the Salt or Tartar; for those, when separated from the Water and Oil, crystallize, dilute not, but stimulate. Nor, 3. Is it owing to the Earth; for that, when stript of its Moisture, is a thick, solid, inactive Mass. Therefore it must only be the *Water* in these Liquors which dilutes and furthers Digestion. It's true, a Mixture of saline Principles with the Water, makes it dilute more forcibly: But then consider first, that all Stimulants exert or stir up Nature above her self; they excite in the Fibres, a Force superior to their ordinary Course of Action, or the natural Exertion of their Strength; but this weakens and wears out their Springs so much sooner. When the Stimulation ceases, they relax, fall back, are languid and faint. To rouse up therefore and maintain this preternatural Vigour, we are necessitated to continue the Course of stimulating Liquors, to facilitate and perfect each Digestion: When this ridiculous Method commences in Youth, Brandy will be too weak a Dram in Manhood, and rectified Spirits will be but cold Stuff in the Decline of Life. As for old Age, he needs not be solicitous to provide against that, except for a Coffin, a Stone or Turf. Whereas smaller, more weak or watry Potables, used in the Morning and Meridian of Life, renders a moderate Glas of Wine, the cherishing and acceptable Milk of old Age, which preserves the Lamp of Life burning, as pleasantly and comfortably, as we are then to expect. But,

2^{dly}, The more to strengthen our Argument, let us consider what is necessary to make up the Nature of Stimulants. And, 1. They must be

The Requi-
sites of Sti-
mulants.

so thin and fine, as to be capable of passing the Cavities of the Vessels, and fixing themselves in the Surfaces of the lesser Vessels. 2. They must be possess'd of such a Degree of Acrimony, as they may be able to clear a Passage to, and seat themselves in the Parts. 3. Tho' the Particles of those acrid Bodies be minute and fine, yet must they be so large, as to have some extra-eminence Part; otherwise the Fibre and Vessel would not be affected by it; and to have a fixt adhesive Part without any Extra-eminence is the Property of Food only. And if acrid Particles have not Points to be darted into the Surfaces of the Channels, they would only be of the Nature of the globular Parts of the Blood, which never give any Uneasiness. 4. These pointed Particles must adhere with such Tenacity, as they may be fix'd for some Time in the Parts.

To the Pungency and Acrimony of Wine and Spirits, I might add the Tenacity and Glueiness of the earthy Parts of strong Ale or Beer; which render them still worse Diluters than Wine. Therefore it's plain, that *Water*, fine Table Beer, or a little Wine mix'd with *Water*, are the best, most safe and wholesome Diluters, and by far the fittest to promote the Digestion of Meat on the Stomach: Which is what I undertook to prove in the second Proposition.

Water also best promotes the second and third Digestions and Nutrition.

But to come more home, let us apply what we have said of the first, to the second and third Concoctions or Digestions. Another Intention of Drink is, to promote the Comminution and Distribution of our solid Food, that it may be converted into the wholesome Nourishment of our Body. But that we may have some competent Knowledge of this, let us briefly consider, 1. The Nature of our nutritive Juices. 2. The Manner of Nutrition. 3. What Liquors will best and most probably answer this End.

The Nature of nutritive Juices.

For the first: Although the Chyle do fill the larger Vessels, yet it cannot repair the Waste of the Solids, being too gross, crude and unprepared; but when broken, altered, rarified, mix'd, subtiliz'd, and fitted to pass the small Vessels, by the Force of the Air in the Lungs, and that in the Blood, and the repeated Acts and Shocks of the muscular Parts of the Body, till it be reduced to a subtile Liquid of the Nature of the nervous Juice, or *Serum*, which is insipid, white, tenacious, and thickens by the Heat of the Fire, Spirit of Wine, or even an increased Heat and Agitation of the Humours in a living Body, which express its Oil, and retain its Salt, whereby it becomes sharp and unfit for Nutrition; and therefore if the Body be continued in good Plight, this formerly useful (but now hurtful) Liquid, must be sent off by the Skin and Kidneys: And then there is a treble Necessity of new, smooth, soft, balsamick

Chyle;

Chyle; 1. To blunt the Sharpness of the Salts of the remaining Stock of Chyle. 2. To repair the Defect of Chyle in the Body; and 3. To restore the Abrasion and Waste of the Vessels; which both the Want and Sharpness of the other had occasioned. This nutritious *Serum* put over a Fire, first thickens, then turns sharp, and lastly exhales, and leaves only an insipid, light, fine and pure Earth behind. The same does the lymphatick Juice. It is of slow Motion in the Body, of a thin, penetrating, unctuous and viscid Nature, of a smooth and insipid Taste, of a clear and whitish Colour, and exists universally over the whole Body: Perhaps also there is some Nutrition in the capillary arterial Tubes; for 1. The Chyle is neither too crude there, nor the Blood too thick, seeing it is capable of entering, and passing along those smaller and finer conic Vessels. 2. It has a slow Motion, slides gently along the Vessels, contains fine enough Parts, and has sufficient Time to be applied to the internal Surfaces of the containing Tubes, which are Requisites essential to Nutrition. 3. This Blood has in it those very nutritive Principles, and the Conditions necessary to Nutrition, and dilates the Vessels, so as their Inequalities appear, and parts of a similar Nature to those abraded being present, and ready in the circulating Mass, have an Opportunity of Attachment and Cementation to the Interstices, where the Motion and Action of the Fluids had abraded and carried off the Particles, and cast them into the Mass of circulating Fluids, to be expelled the Body.

Nutrition is performed in some such manner as this: These Juices thus attenuated and prepared, are forced forward into conic and elastic Tubes, *i. e.* from a broader into a narrower Channel, which resists their Ingress and Motion: There the Humour endeavours to extend and dilate its Sides, whereby the nutritive Particles in a slow Motion, have the Advantage of an easy Apposition and Application to those Parts of the internal Surfaces which are most wasted, thinnest and unequal: The Action of the Vessels at the same Time promotes the Adhesion, and firm Cementation of the new attached Particles to their Sides, where they are fixed till the constant Propulsions and Collisions wear them off again; then they leave some small Interstices in those Parts, where they adhered to the Vessels, and constituted a Part of them; and this Loss of the Substance of the Vessels will still happen, in all Parts of the Body, during Life; *i. e.* whilst the Motion of our Fluids, or Action of our Solids remain; or the mutual Opposition of our Solids and Fluids against one another continues; and the more strong and durable these are, the more Loss do we sustain. But even these abraded or lost Particles are thrown back into a Liquor, which carries in it Abundance of such small Parts of the Nature of those now abraded and lost, but had been applied to

The Necessity of new Chyle.

How Nutrition is performed.

those very Interstices, and with the like Force, whereby the Liquor endeavours to break the Vessel; this Force fits and attaches those stopp'd Particles in those Cavities where they grow together as the former, and become a Part of the Vessel; and so what was lost, is easily and insensibly restored, and the Solids still nourished and preserved, and will be so while the Matter, Preparation, and Apposition thereof with the Force of Motion is the same.

What Drinkables best for Nutrition.

Let us now enquire what Drinkables are best, or fittest for this Purpose, and these we imagine can neither be: 1. Such as contain much Viscidity, or gross unattenuated earthy Parts, which increase the Bulk of the Body in the whole Habit, but make not this Addition to the Solids, but only extend their Cavities, and fill them with congested and stagnating Humours, which really weaken instead of strengthening them. True Nutrition strengthens and thickens the Vessels, without adding Bulk or Load to the Body; but the other Repletion extends, relaxes, and weakens the Vessels; for wherever there is true healthy Nourishment, the Food is diluted with a thin, fine, very separable, and less attracting viscid, or cohering Liquor, the Chyle is well prepared, its different Principles are kept without the Bounds of unhealthy Combinations, in a moving State, whereby, when the Blood equally attenuated and duly mix'd, by the repeated Actions of the Lungs, Muscles and Vessels, is brought to the excretory Ducts of the last, without those Cohesions; and there the nutritive Parts being disengaged, swimming at Liberty in a pure, well conditioned Vehicle, neither the Attraction of other similar earthy Parts is superior to the Motion of the Blood, nor to that Force wherewith they are applied, and fixed to the Sides of the Tubes; nor are they accompanied with, or entangled in a Slime, lying betwixt them and the Interstices, to which they are to be attach'd.

But here there is a Viscidity in the Liquors whereby their earthy Parts attract one another, and their Oil is gross; this being the State of the Liquors they must communicate the same Taint to the Blood, which indisposes it for a brisk, equal and healthy Motion, by which Viscidity and languid Motion, (both favouring Formations of sundry *Moleculæ* when thrown into the small Vessels where the Motion is diminished still more) the first will still be nearest the Sides of the Tubes; and the more fine and serous (wherein is the largest Share of the nutritive Particles) will keep in the *Axis*. Hence little Nutrition. But these Viscidities encreasing, they will still distend, relax, and weaken the Vessel, whence a Repletion, and little Nutrition or Increase of Strength: For the nutritive Particles being kept from the Sides of the Vessels by the *Mucus* which lines them, they will be ground down smaller by each Circulation, till they

they be useleſs, and then either expell'd the Body, or made a part of that *Mucus*, being entangled in it. This is the Caſe of thoſe who make ſtrong Malt Liquors, ſtrong bodied Wines, or made Wines, their common Beverage; and at the ſame Time uſe little Exerciſe: But *Water* drunk affords the moſt liberal and beſt Diſtribution of Nouriſhment, begets the moſt true Strength, and leaſt unneceſſary Load of Repletion: It's true, 1. Table or ſmall Beer well made, fermented, and kept till it be clear, fine, and depoſited its groſs earthy Parts, is much of the Nature of *Water*; it's alſo more agreeable to the Taſte, more pungent to the Glands of the Mouth and Throat, and gently warms and ſtimulates the Stomach. Though Ale or ſtrong Beer have the above Effects on the rich, luxurious, idle and indolent, yet it's in ſome meaſure both Meat and good Drink to the laborious, healthy, and moiling Mechanick (provided it be drank ſeaſonably and moderately, nothing in the Conſtitution or Health forbidding it:) Its Viſcidities are by his great Labour, Force and Action, turned to his Nouriſhment; but the fiſt cannot long indulge the Uſe of this Liquor, and enjoy his Health at the ſame Time.

2dly, Neither are ſuch Liquors as abound with Tartar, or naked Salts, (which give a *Stimulus* to the ſenſible Parts of the Body) the beſt for common Drink: 1. Becauſe they excite a greater attractive Force in the different Parts of the Blood, which hinders the full Attenuation and Mixture of the nutritive Parts with the whole Maſs. 2. Becauſe they give a Pungency to the Veſſels, which ſhortens their Diameters; ſo as the ſmall Veſſels admit leſs Blood into their Cavities, their Surfaces and Interſtices are not fully dilated and expoſed to the circulating Humours, ſo as their Waſte may be repaired. 3. The Nouriſhment which they carry into the Body, is not durable enough; they elevate the Spirits a ſhort Time, but quickly exhaling, they leave the Man faint and drooping; to take off which, he is obliged to repeat his Glaſs, till it become habitual to him; and can as ſoon ceaſe to live, as to be without it: Then indeed Life is very uncomfortable, if not a Burden. 4. All acid or ſtale Drinks are prejudicial to ſound Bodies, ſeeing they abraſe and waſte the ſmall Veſſels; coagulate the Juices by their Pungency, beget a falſe Appetite, oppreſs the Body rather than nourish it, and contract alſo the ſmall Veſſels; hence many and dangerous Diſeaſes. But to lax and weak Habits, to the idle, ſtudioſus and valetudinary, the Tartar and pungent Salt of the Graſs, is doubtleſs of ſingular Service, ſeeing Malt Liquors cauſe Obſtructions, *Water* a Relaxation, and Spirits the Deſtruction of the whole Machine. But even here, Wine requires a Mixture of *Water* to prevent Indigeſtion, Gout, Stone, Gravel, &c.

Thus,

Thus as I. considered Ale in the last Paragraph as Food, so do I Wine (except thin and fine) as a Medicine in this.

Lastly, In this Preparation and Distribution of the Chyle, all spirituous Liquors are improper, for their subtile Parts consist only of Oil and Salt, neither of which nourish; but the Salts being volatile, exhale speedily; part of the Oil (being incorporated with that in our Body) continues, which turning rancid thickens the Blood; the earthy Parts are mostly too heavy to be brought over the Helm in Distillation: Their Salts contract and crisp the solid Parts of our Nourishment, prevent their due Digestion and Distribution, stimulate and corrugate the Vessels, so as their Interstices (which are many, from the Solidity, Action and Abrasion of the Salts) appear not, nor lie in the way of the nutritive Particles. Their more spirituous or volatile Parts in their Exhalation, made way for much of the watry Parts of the Blood to follow, and leave the rest thicker and more disposed to Coagulations. Therefore *Water*, or fine Table Beer, being of the most thin, separable or small Parts, and carrying the least Oil, Salt, slimy Earth or attractive Spirits into the Blood to load the Vessels, or lie between their Sides and the nutritive Particles, are best for Commination and Distribution of our Food, promoting true Nourishment, Health and Strength. *Q. E. D.*

How simple
Liquors supply
the Waste
of the watry
Parts of the
Blood.

The fourth Intention of Drink is, *to supply the constant Waste of the moist and watry Part of the Blood and Juices*, which are its thinnest Parts, wherewith the Salts are mixed; which make it more ponderous. The Advantage of a due Fluidity of the Blood must be obvious to all, who know any Thing of the Nature of animal Bodies. For hereupon depend Circulation, Secretion, Nutrition and Evacuations, Health, Life, and Usefulness; for neither its too great Thickness nor Dissolution can long be attended with the three last. Now what Drinks are most proper to preserve this healthy State of our Juices, will readily appear from this: All spirituous Liquors drunk too frequently (much more were they turn'd to common Drink) thicken the Blood, dispose it to Coagulations and Stagnations. All vinous Liquors, drunk for ordinary, though they strengthen the Fibres, partly by supplying them with a small temporary Nourishment, but chiefly by stimulating them, yet they cause sundry Combinations, Cohesions, and sometimes Concretions in the narrow Canals, by overloading the Juices with saline, tartarous, or other acrimonious Parts (except prevented by Labour or Exercise.) Hence Gravel, Stone, Gout, arthritick Pains, Diseases of the Head, &c. All fermented strong Liquors made of Grain (if drunk often and in large Quantities) carry into the Blood much coarser, tenacious, earthy Matter, gross Salts and Oil, which render the Blood viscid, indispose it for Motion, incapable

pable to pass the Strainers without fouling the Glands, and afford but small Secretion.

It is true, too great a Dissolution of the Blood is also dangerous, but this is mostly the Effect either of Idleness, or an indiscreet and excessive Use of volatile alkaline Spirits or Salts, as of *Sal Armoniac*, Hartshorn, *Sal volatile*, &c. or too much Freedom with Cordials, as Saffron, distilled Cordial Waters; or an excessive Use of weak *Tea* drunk with Saffron, *Sal volatile*, &c. which have ruined many a good Constitution, among the fair Sex especially. Therefore such Liquors as consist of the least Parts, without sudden Exhalation or Rarefaction of the Blood, and of Particles separable with the smallest external Force, disposed to a ready Motion, and have the least Taste of Viscidity, earthy, saline, or other heterogeneous Parts, is the fittest to supply the Consumption of the watry Parts of our Blood; and such is *Water*, &c. *Q. E. D.*

In the last Place, whatsoever Drinks *preserve the Motion of the Blood*, How simple Liquors tend to long Life. *in the most easy, natural, steady, and even Manner, greatly contribute to the prolonging of humane Life.* But all spirituous, vinous, and strong fermented Liquors, stimulate the Vessels of the Drinker, accelerate the Motion of the Blood, sometimes even to a Rapidity. Therefore, although Intemperance were exempted from all Accidents, though it should never occasion either acute or chronic Diseases, yet it shortens Mens Days, as it stimulates the Vessels, raises the Motion and Velocity of the Blood; for though it is impossible to preserve humane Life without Circulation, yet the more accelerated the Motion of the Blood is, old Age and Death steal on so much the sooner, and the Years to which any Man might attain by Temperance, will be in Proportion to the Quickness of his Pulse; for while a Man's Body grows, the Force wherewith the Heart impells the Blood into the Vessels, is superior to their Resistance, and when the impelling Force of the one, and the Resistance of the other, are equal, he continues at a Stand; but as the Vessels become thicker, more compact and solid; then they get the Advantage of the Heart's Force, till from its Rigidity it become very weak, scarce able to expel its Contents, the Vessels also become more inflexible, till their Resistance quite overpowers the Heart; hence the quicker the Pulse beats, the sooner do the Vessels become stiff and inflexible: Thus, allowing 70 Years for the Age of a Man, or A, and 60, or B, Pulses in a Minute; let C be the Number of Pulses of a healthy Person in a Year; then $CBA = 2209032000$, the Number of Pulses in his whole 70 Years. But if any Man by drinking spirituous Liquors immoderately, raises the Circulation to such a Rapidity, as may cause 75 or D Pulses

Pulses in a Minute, then $\frac{CBA}{CD} = 56$, is the Number of Years wherein such a Man will run out the same Number of Pulses. Thus his Pot and Companion shall bring him 14 Years sooner to his Grave, than the temperate Man. But small Potables, not quickening the Wheels of the Machine, not contracting or stiffening the Vessels, nor unavoidably hastening the Termination of Life, are the best to preserve an easy, steady, natural and even Motion of the Blood, and consequently are the best Liquors to prolong Life. *Q. E. D.*

What I have said might be proved from the Health and Longevity of many in both ancient and late Ages, in sundry Parts of the World, who have contented themselves chiefly with *Water*; such as the late *Carybians*, *Apachalites*, *Canadians*, *Causabians*, *Brasilians*, *Japanese*, the Inhabitants near *Davis's Streights*, the People of *Sumatra*, *Java*, of the *Mulattoes* of *Florida* and *Juculan*, &c. But I hasten to the next and last Head, *viz.* The Reason why the same Eatables or Drinkables, are not equally agreeable, wholesome and nutritive to all Constitutions.





A N
 ENQUIRY
 INTO THE
 REASONS

Why the same FOOD is neither equally nor universally agreeable nor serviceable to all CONSTITUTIONS.

*In a LETTER to the Right Honourable and Truly Noble,
 MARY Lady MALTON.*

MADAM,



IT is with the utmost Pleasure imaginable, that I have an Opportunity offered of attempting the Resolution of a Query to your Ladyship: Though I am not unapprized how difficult it is to answer one, in whom Nature gives the Blush to Art; one so well acquainted with, and so much Mistress of our best mechanical Writers. But a Design so ingenuous cannot fail to be acceptable to one who abounds with an innate Love of Candour, and whose whole Life and Actions are the most convincing Proofs, and undeniable Instances of true Nobility, and greatest Virtue, and who esteems

O

seems it her highest Ambition and greatest Glory, to relieve the Poor, Afflicted, Pained, Miserable, and Distressed; who accounts a Day lost, wherein an Opportunity of doing Good to such offers not it self; wherein you imitate not only the Practice of ancient Kings and Princes, but the greatest and brightest Example that ever was in the World, who *went about doing Good*. However, if my present Essay come not up to my Design, the World must conclude me right in chusing such a Patron.

1. The Query proposed affords another Consideration to be examined first, and that is, *What are the Causes of the Variety of humane Constitutions*, the Resolution of which both implies and expresses the former.

The Definition of a Constitution.

2. A Constitution, or Temperament, is *a particular Structure, Conformation, or Elasticity of the Solids, with a peculiar Disposition of the Blood, whereby it falls into certain Combinations or Cohesions more in one Person than another of a different Constitution, whether into Phlegm, Cholera, Melancholy, &c.* or it is the different Qualities of the several Humours and Dispositions of the Parts of the Body, which makes a greater Difference in the Degrees of Health, as well as the Difference of Ages, Sexes, and Non-naturals; all which make a Difference of Perfections in Mens Actions, and a Latitude in Respect of a healthful Disposition of Body; and yet People of all Constitutions may both be said and esteemed to be in Health, although they differ in its Degrees and Perfection of Action. This Knowledge of the Division of Constitutions is necessary to all, who in the least meddle with the Practice of Physick, for it instructs them what Diseases are most likely to arise in each Constitution, those of every one being peculiar, and therefore to be foreseen. And although our Predecessors have handed us down a very dark and unintelligible Account of the Causes of those different Temperaments, yet this should not hinder, but excite our sedulous and rational Enquiry into the Reasons of this Variety, without amusing our selves with their Jargon of Elements, Cardinal and occult Qualities, &c.

Temperaments, how divided by the Antients.

3. Temperaments were divided by the Antients into nine, *viz.* four Simple, Hot, Cold, Moist and Dry; and four Compound, Sanguine, Choleric, Phlegmatick, and Melancholy; and one Temperate, wherein they imagined a just and due Proportion of all the four first Elements of Fire, Air, Earth and Water; but if one or two of those Elements have a greater Proportion to the rest, than they reciprocally bore to them again, the Person was said to be of that Temper. *E. gr.* Did Earth bear a greater Proportion than any of the other three Elements? Then said they, it constitutes a Melancholy Temperament. Did Fire prevail?

prevail? then he is cholerick, &c. They also divided Constitutions into those *ad pondus*, and those *ad justitiam*; in the first there is such a just Proportion of all the Qualities which exist in different Constitutions, so as none of them exceed the other in Quantity: In the last there is a Disproportion of the Humours, as to one or more Qualities, which yet are agreeable to, and hinder not the peculiar Actions of that Body.

4. But we say that Body is hot, whose Humours move briskly, are sharp and dry, its Bowels firm, its Vessels strong and contracted. On the contrary that we repute Cold, whose Solids are loose and flaccid, and Fluids soft and watry, move with a slow Pace, the Body liable to Tumors, and his Mind to Pusillanimity. That is a dry Temperament, which is naturally exceeding thin and meagre, whose Vessels are much contracted, its Fluids few, and those almost acrid. A moist Constitution has a languid Circulation, Fibres lax and weak, Blood watry and insipid, it differs little from the cold one. — The cholerick is much like the hot and dry, it is lean, has little but firm Flesh, its Veins are prominent, the Pulse is quick. — Sanguine People have much and soft Flesh, their Veins are blue, large and distended with well conditioned Blood. — Phlegmatick have much white and soft Flesh, their Blood-Vessels are very small and almost imperceptible. — Melancholicks are very dry, lean, black, and swarthy coloured, their Blood is thick, but well mixed, and not readily changed.

What we understand by their Hot, Dry, Cold, Moist, &c.

5. In sanguine People the acrimonious Salts of the Blood are either not plentiful enough, or they are imperceptible, being entangled in either the earthy or sulphureous Principles of the Blood; and all oily Particles being large, hooked into one another, full of small Branches, they wrap up, enclose and entangle all the other Bodies with which they are mixed, and become the predominant Principles in the Blood. This Sulphur being fat and sweet, must render the whole Mass of Blood balsamick, soft, sweet and fat, by covering and fixing the saline and earthy Parts of the Blood, wherein it is assisted by the Phlegm. The Temper of this Blood being fat, its Mass in a natural State will afford much Sweat, Juice and Lympha, full of animal Spirits, and adapted for a good Plight of Body, and Nourishment of the solid Parts, which enables the Man to perform his Actions and Motions with Ease, Speed, and Pleasure. The Fatness, Smoothness, and Oyliness of such Mens Blood begets a cheerful Countenance, engaging the Respect of Spectators; from this Plenty of Oil, without any sensible Acrimony which may stimulate, they are full bodied, have a white Skin, interspersed with a beautiful red Colour. From this Abundance of Juices their Pulse is full and regular,

The State of Solids and Fluids in a sanguine Constitution.

and all the Recrements afforded therefrom are well proportioned both in Quantity and Quality.

Causes of a
sanguine
Constitution.

6. The Causes of a sanguine Constitution are briefly, 1. A greater Strength of the Stomach, Bowels and Mesentery, to prepare and force the Chyle into its Vessels, and regularly to expel the Evacuations. 2. The Numerousness and Openness of the Lacteals. 3. The natural Strength and elastick Force of both the lacteal Vessels and meseriack Glands. 4. The just Proportion of all the Secretions over the whole Body to one another. 5. The placid State, and smooth Undulation of the Fibres from the Softness and Smoothness of the Blood. 6. The Prevalency of a sulphureous Principle in the Blood, before the Chyle was mix'd with it. 7. The Freedom of Stomach and Juices from much Acrimony, Viscidity, Serosity, or grumous Earth.

The State of
Solids and
Fluids in a
choleric
Temper.

7. When the acrimonious Salts of the Blood are set at Liberty from its other Principles, especially from the Earth and Sulphur, and is so diluted by the Phlegm, as to separate the Oil which entangled the other Bodies wherewith it was mix'd, then this acrimonious Salt is the superior Principle of the Blood, which by the Sharpness of its Particles, and Velocity of its Motion, and Collisions with other solid Particles existing in the same Fluid, it forcibly acts against the Sides of the Vessels, carries off Part of them, stimulates the Fibres, so as here the Blood errs not in Quantity, but in Quality, and this Quality constitutes the Choleric, or hot and dry Temper. It is hot because the Circulation is quicker in equal Times than in the sanguine. It is dry because the Blood has less Phlegm, Perspiration being greater here. It is evident that Blood thus conditioned cannot afford such sweet and smooth Recrements as the last, therefore the Body is not so fleshy and fat, the Pulse more quick, from the elastick Force of the Fibres carrying on a brisk Circulation. The nervous Juice strain'd off from this Blood is not so moist as that separated from the sweet oily Blood, therefore must the animal Spirits of the Choleric be exceeding fine and subtile, endued with a free Motion; and also the Vessels of the medullary Part of the Brain will be pliant.

Causes of a
choleric
Temper.

8. A choleric Constitution is occasioned by, 1. A Largeness and Patency of the Glands of the Liver, where much Bile is separated from the Blood, pour'd into the Bowels, and mix'd with the Chyle. 2. The Predomination of Acrimony in the Blood. 3. The Irritability of the Fibres and Solids, and their Susceptibility of a *Stimulus*. 4. An Elasticity and Agility of the Fibres and Solids. 5. A free Perspiration, carrying off the more serous Parts of the Blood. 6. A greater Disposition of the Blood and subtile Spirits to Motion, &c.

9. Give

9. Give me Leave to take Notice here, before I proceed to the other Constitutions, that not only the Causes of different Temperaments of Body are explicable from the different State of their Solids and Fluids, but also their different Tempers of Mind may in some Measure be accounted for from the same; for the Recrements of sanguine Peoples Blood being well proportioned both in Quality and Quantity, sweet and well temper'd, the nervous Juice will be so unctuous as to make the small Vessels of the Cineritious, or external Part of the Brain very pliant, that the animal Spirits easily convey to them the Impressions made by external Objects upon the internal Organs of the Senses. Men whose nervous Juice is sulphureous (and therefore porous) come easily at the Knowledge of such Things as are offered to their Mind through their Senses, and their Ideas will leave an abiding Impression thereof on the Medullary, or white Substance of the Brain, which causes a great Vivacity, a retentive Memory, and a solid Judgment. For the Nature of their animal Spirits being soft and smooth, their Motion regular, neither rapid nor slow, their Waste not speedy, the Idea raised by external Objects upon such Organs of Sense will neither be too swift nor slow, but make a deep and durable Impression, therefore the Judgment has the Advantage of Rumination, Reflection, and Reasoning. The Softness of the Blood, the Smoothness and Plenty of the nervous Juice, the pliant Undulation of their Spirits, must make them pleasant, chearful and gay, in Love with what pleases their Senses, the Titulation and Gratification whereof are often ready to seduce them, unless they are under Command of Reason and Religion. This Pleasantness and Gaiety of Temper renders them civil and obliging to Equals, grateful to all, and compassionate to the Miserable: And if to this Temper a good Education be added, it makes them also wise, learned, polite and sociable, all which challenge a Regard, so as such Men easily come at their Ends, or are successful in their Enterprizes. From the Subtility and Velocity of the animal Spirits of the Cholerick, the Impressions of external Objects upon their Organs of Sense are speedily conveyed to the common Sensory; therefore must such Men have a great Penetration. But because their Juices are disposed to a quick Motion, they cannot reflect upon their Ideas with that Steadiness that is necessary to perceive wherein they agree or disagree, therefore make they wrong Judgment, and reason falsely, especially when their Imagination and Vivacity are raised. From their hasty way of thinking, the Traces of Impressions of external Objects made upon the Brain prove superficial, and are presently defaced by new ones. From the Superficialness of those Impressions, and their plentiful Succession of new Ideas, they are apt in Conversation to fly from

How the Temper of Body affects the Mind, or alters it.

from one Subject to another; and from Want of Attendance and Reflection upon their Ideas, so as to form a right Judgment, they are tenacious of their own Opinion. The superficial Impression made by Objects will occasion a very slippery Memory: Their Vivacity preventing them the Advantage of examining the Agreeableness or Disagreeableness of their Ideas, makes them inconstant in their Resolutions; for the same Reason are they conceited, and not to be convinced without great Difficulty. From the Briskness of their Circulation warming the Body, and their Imagination, they are apt to be passionate.

From the like Reasoning might I shew with *Vicussenius*, in the *Transactions of the Royal Academy of Sciences*, why Ideas raised by external Objects, in the Minds of the Phlegmatick, are languid and easily defaced; why their Judgment is seldom very penetrating, or their Memory retentive; why their Ideas are of short Continuance; why such Men are not shaped out for brave Actions, or if they undertake them, are they likely to prove successful; nor why curbing their Passions is no great Glory, their Constitutions not prompting them strongly to the Gratifications of Sense and Desire; why Honesty in them is little Virtue, for Fear of Events frightens them from what may be of dangerous Consequence, &c. And why Ideas excited by the Presentation of Objects to the external Senses of the Melancholick are slowly conveyed, but make deep Impressions on their Brain; and though they come not so quickly at the Knowledge of Things, yet the Traces of their Ideas are too strong and deep to be quickly defaced; therefore have they Time to ruminate on them, and examine wherein they agree or disagree, on this Account have they a solid Judgment, a retentive Memory, and reason closely, &c. But this being done at more Length already, I proceed,

State of Fluids and Solids in a Phlegmatick.

10. When the Salt, Oil, and Earth in the Blood happen to be diluted with too great a Quantity of Water, whose Particles are small and pliant, they easily and plentifully insinuate themselves into the Pores of the Particles of the other Principles, separate and dissolve them, and so thin the Blood. This is the Cast of phlegmatick Peoples Blood, who are therefore of a cold and moist Temper. From this Prevalency of Water over the other Principles this Phlegm is so united with the fine Oil, and so attenuates it, and dissolves the Earth and Salt, that the Juices separated from such a Blood must be fat and sweet, but much more serous than those of the sanguine; therefore are phlegmatick People often fat, their Skin white, Countenance mild, Pulse slow, their animal Spirits are too much soaked and diluted with Water, therefore are they not so strong, active, laborious, and indefatigable as others.

The

The Fluids of the Phlegmatick bear a greater Proportion to their Solids, therefore must the last act with less Force, their Fibres are weaker, and not so firmly attach'd, and over lubricated with the redundant Water and Oil in the Blood; their Bowels and Vessels are weaker, therefore less able to bear much Exercise or hard Labour.

This Redundancy of Phlegm in them is from the Inability of their Solids to act upon, resist and separate throughly the whole Mass of Fluids, and to extricate the Principles from one another. For from the due and full Attenuation and Mixture of those arises the red Colour of the Blood; and this Mixture is not attainable but by a vigorous Resistance of the Solids, at least equal to that of the Fluids. It is this Laxness of the Solids, and slow weak Motion of the Fluids, which occasions a copious Secretion and Reposition of Oil and *Serum* in the adipose and lymphatick Vessels; hence a gross and bulky Habit of Body; and because both the Fibres want a greater *Stimulus*, and the Nerves a subtiler Juice, to raise a Briskness and Vivacity in the Muscles, therefore is the Countenance simple and mild: The Fibres are lax from their lesser Degree of Cohesion in their constituent Parts from the much *Serum* in the Body, which stretches and distends the Vessels and Fibres so as they touch on smaller Points. This Plenty of warm, soft *Serum* lessens the Attraction of the constituent Particles of the Fibres.

11. A phlegmatick Constitution arises from, 1. The Prevalency, or too great Proportion of the watry Parts of the Blood, to its other Principles. 2. The Laxness and Weakness of the Solids. 3. The small Vessels are loaded with a warm, softening, dissolving *Serum*; or Viscidities furr up and obstruct their Cavities.

Causes of a
phlegmatick
Constitution.

12. When the terrestrious Parts of the Blood prevail over its Sulphur, Oil and Salt, *i. e.* when Earth exceeds its due Quantity in Proportion to the rest, it constitutes a Temper cold and dry, or melancholick. Here the Texture of the Blood is too thick; its recrementitious Juice of too dense or thick a Consistence, and less fluid than those of other Constitutions. Such Blood must be attended with a very muscular Body: For it being thick and not over-diluted with Phlegm, affords but few recrementitious Juices, and what it yields are not over-thin, so as the Parts nourished by it must have more Consistence and Vigour than those of the other Tempers; and from the greater Strength of the Solids they are generally more healthful; for the same Reason their Pulse, tho' slow, is strong: Their Solids bear a greater Proportion to their Fluids: The constituent Particles of their Fibres are connected more strongly, and cohere firmly, either because they touch in larger Surfaces, or the Particles being more simply terrestrious, attract more powerfully: Hence they

State of the
Solids and
Fluids in a
melancholick
Temper.

they are more stiff and rigid, better for Labour, but less agile and elastick. The Strength and Rigidity of these Peoples Fibres arise from the Thickness, Closeness, and good Mixture of their Blood, which is neither easily altered nor changed, though Earth be the predominant Principle in it, and all our Solids are constituted of Earth: Therefore its greater Proportion in our Juices must occasion strong and stiff Solids. The Thickness, Stiffness, and Compactness of this Blood, dispose it more to fall down upon, and load the *Viscera* of the lower Belly, and so constitute a Temper truly and properly melancholick, heavy, pensive and slow. This Thickness of the Blood is discoverable from an Iron-like or blackish swarthy Colour, and great Strength of the Body, from a strong and slow Pulse: The Man's Intentness upon the same Ideas, his Gravity, Choice of a solitary Life, a frequent Sense of Weight and Oppression of the abdominal *Viscera*, &c.

Causes of a melancholick Constitution.

13. The Causes of this Constitution are, 1. The Abundance of earthy Parts in the Blood, and its Thickness and Dryness therefrom. 2. The Strength and Consistence of their nervous Juice. 3. The Stiffness and Rigidity of their Fibres and Solids. 4. The Disposition of the Blood, from its Thickness to load the Bowels of the lower Belly.

14. Having thus taken a short and general View of the State of Solids and Fluids peculiar to each Constitution, the immediate Cause thereof, with the particular Symptoms of each, and accounted for those Signs; let us next descend to a more strict Examination of both the constituent and accidental Parts, with the mediate Cause of this Variety.

How Diet affords us the Pathognomonical Signs of each Constitution.

Give me Leave only to premise in general, that our very Diet (though little regarded) affords us some certain Indications and Proofs of each Temperament. Thus Honey, and all stimulant, saline, and abrading Things discover and disturb the Cholerick. An aqueous, soft, insipid, or viscid Diet swells up the Phlegmatick, and disorders it. All strong Evacuations, much Fasting, or an obstinate Course of terrestrious Food, loading the abdominal *Viscera*, causing a small dull Pain, Weight, Oppression, and Restlessness, shew the Body to be Melancholick. Long Feeding on lubricating, balsamick, very nutritious Food, with Neglect of Exercise, will beget several Diseases in the Sanguine, from a *Plethora*.

How the Solids vary in Conformation and Structure.

15. The Solids also vary in their peculiar Conformation or Structure. For if the Heart be larger and stronger, and its Vessels endued with a more elastick Force in Proportion to the rest of the Body, the Blood must be better mixed and attenuated, and thrown more forcibly about the Body, and the Heart bears a greater Proportion to the other Parts, than they bear to it. This superior Strength in the Heart, and its Vessels, I know, helps to secure one against Polypus's, and other Excrescences

The Force of the Heart greater in some.

cencies on the Insides of those Vessels, but at the same Time exposes the Heart more to Callosities and Opification in the Decline of Life.

16. Some People have a larger Liver, and its Vessels wider and more open, therefore have they a greater Quantity of Bile separated from the Blood, and poured into the *Duodenum*, and mixed with the Chyle. Where the Vessels of this Viscus are strong and patent, the Body is less liable to obstinate Jaundices, Schirrus's, and Obstructions, &c. but on that Account it is more exposed to bilious Cholicks, Gripes, Loosenesses, and other Diseases produced by much Bile. Bilious Secretions more copious in others.

17. Such whose Stomach and Intestines are stronger in Respect of the rest of the Body, have more, better attenuated and prepared Chyle, and more powerfully expelled the Intestines: Hence the Body is better supplied with Nourishment, and less liable to Diseases from Flatulency, Crudities, and Indigestion, Cholicks, Gripes, &c. but more exposed to gnawing Pains, and Convulsions of the Parts, when they are much irritated by acid Humours, &c. Some have stronger Stomachs and Bowels than others.

18. The Vessels and Glands of some Peoples Kidneys are strong and more elastick than those of others, whereby they perform their Office better, and the Body is less grieved with bloody Urine, mucilaginous Discharges, or Stones and Gravel, &c. I might mention many more Differences of the Conformation of the different Parts in sundry Persons, if it were needful. Some have their Kidneys more strong and elastick.

19. But the Solids differ not on this Account only, but also in Respect of their different Tensions: For some People have lax and weak Fibres and Vessels, others have them more elastick, agile, and disposed to Action; others have them stronger, but a great deal more stiff and rigid, but less quick and active; and such as the Fibres are, whether lax, weak, elastick, stiff, &c. such must the Vessels constituted of them be. Thus a Vessel composed of lax Fibres must be weak, &c. that of strong Fibres strong, &c. Peoples Solids differ in Respect of their Tension.

20. A lax Fibre is that nervous Thread, whose constituent Particles attract each other in a lower Degree, or cohere not so firmly to each other, either because the cementing Power is less, or because the component Particles touch in less Points. *Corol. 1.* Hence we see that where the Fibres are either constantly soaked in much softening, tepid Serum, so as they have the Force of their Cement diminished, or where the constituent Particles of a Fibre touch on lesser Surfaces, that Fibre must be weak. *Corol. 2.* The Vessels formed of a lax or weak Fibre must likewise be lax and weak. *Corol. 3.* That the Mixture and Secretions of the Juices depending on the Force of the Solids, where these are weak, the other must be imperfect, and Serosities remain in great Plenty

in the Body. *Corol. 4.* That a lax Fibre must also be a very ductile one, and the Vessels constituted of such capable of great Distention, and Lodgment of Matter of any kind; no Wonder then to see such often languishing in Dropsies, Tumors, &c.

The Definition and Effects of an elastick Fibre.

21. By an elastick Fibre I understand that inherent Force in a Fibre, whereby when it is so bended, extended, or compressed, as that its constituent Parts are lengthened out, but not discontinued, broken or separated; when this Extension or Compression ceases, the Fibre re-assumes, or springs back to, its former State with great Velocity; this Fibre is agile, performs its Actions or Motions more perfectly, easily and speedily in equal Times; or it is a nervous Filament, which, though it be smaller than the stiff or rigid, yet have its Particles a firmer Cohesion than those of the lax. *Corol.* Because the Tendency of its Particles to each other is greater, therefore will it act with a greater, quicker, and more sensible Resistance against the Fluids contained in the Vessels constituted of it.

The Definition and Effects of a rigid Fibre.

22. A stiff and rigid Fibre is that Thread, which though it acts with greater Strength, yet it moves with less Velocity, or it has a lower Degree of *Nisus Restituendi*; because it is constituted of more or larger Particles than the two former, either the Attraction of its Particles is stronger, or their Cementation to one another firmer. *Corol. 1.* Because the Fibres are stiff, the Vessels will be less flexible, their Cavities narrower and shorter. *Corol. 2.* The Stiffness of the Fibres must prevent the large Extension or Dilatation of the Vessels. Hence no Humours, or except such as are very grumous and dry, can find any Lodgment or Settlement in them; but when a Collection of Humours fall upon a Part, their more fluid Parts must be expell'd, and more earthy, thick or saline will remain. Therefore are Persons of this Constitution more liable to Cancers and Schirrus's. *Corol. 3.* Because these Fibres are very strong, their Juices must be thicker and drier; for the more serous are powerfully expell'd. *Corol. 4.* Because they act with less Velocity, the Pulse which depends upon their Motion must be slower.

A lax Vessel what.

23. A Vessel is said to be lax, either, 1. When the Attachments or Connection of its Fibres with one another is such, as may be separated by a Degree of Motion, either little or no more than what is necessary in a State of Health. Or, 2. When the Vessel is so distended and dilated that the connected Fibres are either stretch'd beyond their Spring and Tone, or their Interstices so large, as the more aqueous Parts of the Blood make their way through them, and over-lubricate the Fibres, so as to lessen their cohesive Force. 3. When their contained Blood and Juice is sluggish and inactive, from the Abundance of *Pituita* mix'd with it:

Or

Or lastly, when they have not been exerted, and put forth on Action, but laid by and become resty.

24. A Vessel is said to be weak, when the Fibres constituting it are such, and it is at the same Time duly filled with Fluids: It is reputed weak, when loaded with a *Plethora*, or Fulness of good conditioned Blood, stretching it beyond its proper Tone; but more especially if those Humours, or that Blood be viscid, thick, or such as requires great Resistance from the Vessels, to continue it in due Motion and Mixturè.

A weak Vessel what.

25. A Vessel is said to be elastick, when its Fibres are endued with a stronger cohesive Power, and greater Attachment in Proportion to its Bulk, and is capable at the same Time to act with a greater Velocity and Strength.

An elastick Vessel what.

26. A Vessel is taken for stiff and rigid either when, 1. The Fluids running through it do press upon and distend its Sides, so as the smaller Vessels in its Coats are deprived of their Fluids, and thereby degenerate and grow together into an impervious Solid or Fibre, but not of the simplest Kind, and will act with a Force equal to all the simple Fibres united, and stripp'd of the Resistance of their contained Fluids. Or 2. The intercurrent Fluids thicken and adhere to the Sides of the Vessels, and destroy their Cavities.

A rigid Vessel what.

27. The Reason why a very elastick Fibre acts with a greater Velocity, or in less than equal Times with a rigid, is, 1. The Fluids in its Nerves are finer. 2. The Tubes themselves are more flexible. 3. The Blood is not so earthy and thick.

Why elastick Fibres act with greater Velocity than the stiff.

28. The Elasticity of all Fibres is proportioned to their Strength, and their Strength is adapted, 1. To the Quantity of Matter they contain. 2. To the Cohesion of that Matter; for where the cohesive Power is weak, they are capable of being readily stretched and broken; when this Power is too great, they are less flexible, their constituted Vessels more narrow and short, and their Resistance of the free Motion of the Fluids too great, because of their Tendency to come near to one another.

Elasticity how proportioned.

29. The Causes of lax Fibres and Vessels are, 1. The Alteration of our Food into the Nature of sound Juices obstructed; and this proceeds from too great a Sluggishness of the Solids, and waste of the more attenuated and thinner Fluids; or from the too much Tenacity of our Food, whereby it resists and overpowers the Force of our Solids, which should duly alter, mix, and attenuate them. 2. The too slender Cohesion of the constituent Parts of the Fibres to one another, arising from too languid a Motion of the Fluids, and this from a Defect of muscular Motion. 3. A too great pulling of the Fibre, till it is ready to separate or break.

Causes of a lax Fibre.

This lax Fibre is capable of great Dilatability, even to a Prodigy; the Manner whereof is no more inexplicable than the Causes. For the Blood moving slowly, the nutritious Particles have the Advantage of an easy Attachment to the Sides of the Fibres or Vessels, which Particles being fix'd, the constituting Particles of the Fibre still dilating, giving way, and receding from their Contact, they separate, and the formerly attached Particle having now the same Degrees of Cohesion comes in betwixt the two just now separated, and is attracted by, and attracts both, and the slender Cohesion of the Particles of the Fibres, and their Weakness in Infancy and Childhood, and their making Room for the Interposition of new ones betwixt them, is the true and explicable Cause of the Child's Growth, as well as the Extremities of all the Vessels being Fluids. By this Means a Fibre may be monstrously dilated.

Causes of an
elastick Fibre.

30. The Causes of an elastick Fibre are, 1. A too free and frequent Use of Foods consisting of separable and volatile Parts, or Oils and Salts, with some Earth so prepared before we take it, that it resembles the Juices in a strong and healthy Body, as Milk, Eggs, Shell-fish, rough Wines, &c. 2. An Increasing and Invigorating the Motions of the Solids and Fluids by much bodily Exercise and maintaining a plentiful Perspiration. 3. Many acid and austere Meats and Medicines. The Manner how acid or austere Corpuscles become a *Stimulus* to our Solids is, when these abound in the Blood, and it giving a Resistance to the Solids, and they mutually resisting it again in the opposite Actions of each other, these sharp *Spicula* have their Points darted into the Sides of the Vessels, and separate or wound the Fibres of the constituting Membranes. The Action of saline Bodies are most visible and intelligible to them who consider the Actions and Effects of *Cantharides*. But how this minute wounding, or Separation of a Fibre should excite Pain, is only explicable by him that understands the *Modus* of the Union of our material and immaterial Substances.

Causes of a
stiff Fibre.

31. The Causes of a stiff Fibre are, 1. A greater Quantity of Solids in Proportion to the Fluids. 2. The Blood is thicker and drier; their nervous Juice strong, and therefore neither so fit in an Instant, *ad Nutum Animæ*, to inflate the Vessels, nor so susceptible, of a forcible Expulsion with Velocity. 3. The Vessels themselves are narrower, their Diameters shorter, and their Sides thicker; therefore must they give a greater Check to the speedy Motion of the Blood and Juices.

How watry
and fat Foods
relax.

32. Watry and fat Foods relax the Fibres, 1. From a Want of a due Mixture of earthy Parts to correct those, and repair our Loss; and by their lubricating and moistening too much, whereby the Fibres become

come more ductile and extensive, and lose their Force. 3. By the watry Blood over-filling and stretching the Vessels.

33. Earthy and rough Foods strengthen the Fibres, 1. For they are made of fine earthy Particles, duly prepared and cemented together. How rough and earthy strengthen. 2. The earthy Aliments make the Blood drier and stronger, so as the Solids are not over-moistened and soaked in warm, watry and oily Juices. 3. Earthy Particles are most blunt and obtuse, so as their Points neither penetrate, pain, or tear the Sides of the Vessels, nor put the Fibres upon a *Conatus* of Contraction, and drawing nearer to one another, to expel the penetrating Body. *Corol.* 1. Hence we see the Reason why simple Foods are the most healthy and strengthening. 2. And why a liberal and continued Use of the most earthy Foods are not the best for Attainment of Health and long Life. 3. And why the Use of earthy rough Foods answer the Recovery of a weak and lax Fibre and Vessel so well.

34. Foods of Aromatick, light, separable and volatile Parts render healthy Fibres elastick, because they afford much and easily prepared nervous Juice to fill the Nerves, and serve for muscular Motion; but are not so fit for Nutrition, because Salts constitute no real Part of our Solids, and the volatile Parts are soon attenuated, prepared, and sent off by Perspiration and Urine. *Corol.* 1. Hence we learn the Unsuitableness of such a Diet for the Cholerick, whose Juices are already too saline, pungent, volatile and subtil, for it dries their Fibres, and crisps them; makes their small Vessels grow up, and hastens old Age and Death; disposes their Bodies for the Reception and Susceptibility of the irascible Passions, and helps to deprive them of the Serenity and Composure of their Minds. 2. For those very Reasons Nature indicates its Excellency to the phlegmatick, bulky, and dropical, as it stimulates their Solids, attenuates and dissolves their Fluids, promotes Perspiration and Urine. 3. Here we see the best Diet for the Aged, to assist Nature in the Defect of Perspiration, from a Sluggishness of both Solids and Fluids, and the Decrease of their minute Vessels. How Aromatics render the Fibres elastick.

35. Solids that are too stiff must be relaxed by thin, watry, and lubricating Food and Medicines, gentle Exercise, emollient Baths, Fomentations, Steams, &c. Such as are too lax must be stimulated, corrugated, and invigorated by aromatick, nervous, and volatile strengthening Food and Physick, much Exercise, the cold Bath, and Abstinence from too much Sleep, Indolence, Study, and Day Napps. Too elastick Fibres require nutritive Food, and somewhat tenacious, that their Spring be not too quickly worn out, and the Lamp of Life extinguished. How too-lax, stiff and elastick Fibres are to be altered.

36. Solids.

How Solids
differ in Re-
sp. & of the
Glands or
Strainers.

36. Solids differ also in Respect of the Difference there is in the Vessels and Strainers of sundry Persons. For some have large Vessels, others small; some have sluggish and unweildy Vessels, others active, elastick, and Tubes disposed to Motion; others very strong, but stiff and slow moving Canals; some have large adipose Vesicles, others small; some have large salival Glands than others. The Diameters of the renal secretory Vessels are much longer in some than in others, whereby they drain off much more Serosities and Salts from the Blood, and leave less for the Skin to do; hence are they more obliged to their Kidneys in Proportion, than to their cutaneous Glands, or their excretory Ducts. The Glands of the Liver are much larger and opener in some than in others, therefore have they more Biles. Some have their pancreatick Strainers larger than others. The lymphatick Vessels are greater in some than in others. The Lacteals are larger and stronger in some than in others; therefore have they more Blood, if they eat good Food proportionable. Some Females have their uterine Blood-Vessels larger, stronger or smaller, and weaker than others. Some have the Glands of the Brain more clear, open and large than others; hence a better Stock of nervous Juice, a more free and better Understanding, a less clouded or eclipsed Judgment; and so of the other Parts of the Body.

Solids differ
in Respect
of their
Strength.

37. The Solids differ in their Strength according to the Activity or Indolence, Laboriousness or Laziness of the Persons. For the Indolent, Studious, Idle, Luxurious, Intemperate, and *Venus's* Slaves have more lax and weak Solids than the Laborious, Temperate, Chaste, or such as use daily Exercise.

38. The Solids of the same Persons do often differ among themselves in their Degree of Tension and Strength. For the Muscles of some Members are stronger in Proportion than those of the others; for some have the Heart stronger, others the Stomach and Intestines, or Liver, or Kidneys, or Lungs; others the Hands, some their Legs.

They differ
in respect of
their parental
Stamina.

39. The Strength or Weakness, Soundness or Diseasedness, Stiffness or Elasticity of the Solids do primarily depend upon the first *Stamina* the Embryo's of our Nature received from our Parents. This is the primary, mediate, or remote Cause of various Constitutions in different Persons; and it is neither so unintelligible nor inexplicable as some have imagined.

Tension of
the Solids va-
ry according
to the sundry
Stages of
Life.

40. The Tension of the Solids varies in Respect of the different Stages of Life. For Infancy abounds with Humidities; its Fibres and Solids are lax, and the Body moist; but the Heart having a shorter Way to throw the Blood about, its Circulation is brisker, and its Motion heats the Body.

Body. In this Period the Fibres are not so firm and strong. 1. Because of the Redundance of Moisture in the Body. 2. Because of the Laxness of the Vessels themselves. 3. Because of their Want of Motion and Exercise. In Youth the Fibres are stronger, and the Blood thicker, but their Vessels and Bodies being lengthened out, it has a longer Circuit to go, therefore is the Body more temperate, and the Pulse stronger and slower. In Manhood the Elasticity of the Fibres is at its Height, for now the Solids bear a greater or nearer Resistance to the Fluids: This is the Meridian of Life, now all the Secretions and Evacuations are discharged best, and the Body being at its full Growth, and continuing some Years without either Increase or Decrease, this must be the Halcyon Term of Man's Days. In old Age the Fibres are become stiff and rigid, their Motion is slower, all the animal Actions are weaker, Evacuations are impaired, Secretions diminished, and the Body turns cold and moist.

41. The Solids are also susceptible of Alteration from the Nature of those Eatables and Drinkables wherewith the Body is nourished; thus a long and continued Course of earthy Food, and much Exercise will change a lax Fibre into a strong. An obstinate Use of tenacious and flatulent Food that consists of very viscid Parts, will turn a sanguine Temper into a phlegmatick; for it overcomes the Resistance of the Solids, and diminishes the brisk Motion of the Fluids, whereby they are less duly mixed, but being thin, watry and viscid, generate Obstructions in the small Vessels, turn the Body pale and cold; and in this slow Motion of the Fluids, the Blood is not prepared to pass all the Strainers of the Brain, and have all its nervous and animal Juices strained off for the Supply of the Solids. A phlegmatick Temper, by a tedious and liberal Diet of volatile, pungent Aromaticks, and Things easily separable, commiscible, and of quick Digestion, and producing Abundance of good soft balsamick Blood, full of fine animal Oyl, may be changed into a sanguine. A sanguine Constitution, by much Exercise, Abstinence, saline and aromatick Foods, occasioning a copious Perspiration of thinner, watry Parts of the Blood, and an Invigoration and quicker Motion of the Solids, may be turned into a cholerick from the Salts in its Juices, and the increased Action and Agility of its Fibres. And a cholerick by much tedious and thickening Foods, and an intense Use of the intellectual Faculties about the same Ideas may be converted into a melancholick. And that by Abstinence, acrimonious Food, much Exercise, and frequent slight glancing on Ideas may become a cholerick.

42. The Climate also makes some Alteration in Constitutions. For a phlegmatick removed from a moist, marshy, foggy, or woody Countrey,

to

Constitutions
alter'd into
one another
by our Food.

By the Air.

to a clear hot and dry Air, by Temperance, Exercise, and a Diet somewhat detergent and balsamick will incline much to a sanguine. A sanguine Person removed from such a thick, gross, moist Air, and placed in a dry, hot and clear Countrey may come near to, or turn to a cholerick, if at the same Time he use an acrid Diet, and so of the rest.

By the Passions.

43. Neither are the Passions without their sensible Effects upon our Bodies; for where the depressing continue long, frequently, and intensely, they break the strongest Constitution, weaken, relax, and load the Fibres and Vessels; on the contrary, the elevating Passions give our Solids a *Stimulus*, and raise them above Nature, and put our Blood in a Hurry.

Tension of the Solids differ according to the different Sex.

44. The Difference of Sex is the last Thing I shall mention, which occasions different Tensions in the Solids; for Womens are generally more lax and weak than Mens, because they are more liable to a *Plethora*, or Fulness of Blood, which is wisely provided by the Author of Nature for the Nourishment of their Young. Idle, indolent, sedentary and studious Persons have more lax Fibres than the laborious; Exercise accelerates the Motion of the Fluids, and promotes their Mixture and Secretion, and invigorates the Fibres. Hence Persons who use much Exercise have strong Fibres, because the Resistance of the Solids is answerable, if not in some Degree superior, to that of the Fluids, whereby they are attenuated, mixed, and prepared for Nutrition, and all the natural and necessary Secretions; the Vessels of the larger Glands have their suitable Vigour, and suffer no Stuffings, Obstructions, or *Remora* in them.

A Fibre what.

45. To render what I have said on the Solids more intelligible, it may not be amiss to add, that a Fibre is an animal Thread, or nervous Sprig made up of solid Particles of Matter chiefly earthy. For none of the other Principles are capable of that *Conatus* or Tendency to cohere; and this inherent Force of Cohesion have all the Fibres constituting the Membranes, Vessels and Solids of the whole Body.

The Cause of Cohesion.

46. The Cause of this Cohesion is the same in the little as in the great World, *viz.* the mutual Attraction of every Point or Particle of Matter in the Fibre towards one another, and the Cementation of the Particles with a delicate Oil.

Why the Parts have a Tendency to one another.

47. This Tendency of the Parts towards one another is preserved by the fix'd Points of the Particles of the Fibre, and by the Circulation of the Fluids in the Vessels, and the Counterbalance of the Attraction of the Antagonist Particles. And perhaps the Air may be of some Assistance in uniting our Solids; for, as Sir *Isaac Newton* says, *Those Particles will recede from one another with the greatest repulsive Force, and are most diffi-*

difficultly brought together, do upon Contact cohere most strongly. Qu. 31. And Mr. Hales says, if the Attraction of Cohesion or an unelastick Air Particle be proportionable to its repulsive Force in an elastick State; then since its elastick Force is found to be so vastly great, so must that of its Cohesion be also. Sir Isaac Newton demonstrates from the Inflection of the Rays of Light, that the attracting Force of Particles near the Point of Contact is 10000,0000,0000 greater than the Force of Gravity.

48. The Laxness or Solidity, Looseness or Compactedness of the Fibres of Bones, Membranes, Vessels, Muscles or Cartilages, depend on the different Degrees of mutual Attraction, wherewith the Particles are combined; and as the Blood is a Mixture of various Materials, Nature curiously proportions this Mixture according to those many different Uses for which it is designed. The Reason of the Growth of Animals is the Tenderness of the Extremities of the capillary Vessels; for they all terminate in a Fluid, while the Animal grows; for the very Bones where they are articulated with one another are tipped with a soft glutinous Cartilage, which when it turns to Bone, the Animal ceases growing, and when the Extremities of the capillary Vessels become solid Membranes, their Elongation is at an End, and an Animal continues at that Growth, till they collapse, shrink up, and the least Vessels degenerate into Fibres; then the Animal declines.

Cause of the different Cohesion of the Solids.

49. The Force or Resistance of a Solid against its Fluid, is, 1. Only the *Conatus* or Tendency of its Fibres to come closer or nearer together, and oppose the Existence of a Space, and expel the Fluid contained in the Vessel. 2. The Change of the Vessel's Site or Posture; for when the Vessels are straitned, the Particles of the Fibres touch upon larger Surfaces or Points, act with more Force, and expel the Fluids more vigorously. *Corol.* The shorter then the Diameters of the Vessels are, they act with so much more Force upon the Fluids; and on the contrary, the larger the Cavities of the Vessels are, they act with the less Resistance. *Schol.* 1. Hence appears the Reasons of the Blood's Circulation in the smallest Vessels, sited at the greatest Distance from the Heart. *Schol.* 2. Hence we see the Reason why Nature has not provided large Basons for receiving the Blood from the capillary Arteries on the Body's Surface and Extremities, but returns it by sundry Ramifications of small Veins uniting and dividing several Times till they reach the *Cava*. *Schol.* 3. Here we have the Reason why if one Branch of a Vein be obstructed, the Course of the Blood is not stopp'd, but the other Branches supply its Place till the Obstruction be removed. *Schol.* 4. Hereby we can account for the Difficulty in removing Tumours placed in the smallest Vessels, such as the lymphatick Glands, &c. *Schol.* 5. Hereby we see

Why the Vessels resist the Fluids.

why schirrhous and carcinomatous Tumors are so inveterate, and mostly fatal Evils; for not only are the small containing Vessels stretched out beyond their Tong, but the distending Matter is so thick, earthy and strong, that it is impossible for the Vessels to attenuate and dissolve it; and with this Thickness Cancers have an Acrimony joined, which often corrodes the Vessels and Parts adjacent. *Schol. 6.* This shews us why an *Ascites* is the most tedious Sort of Dropsy (except the *Hydrocephale*) to deal with, even where there is no Rupture of the Lymphaticks.

Difference of
Constitutions
from the Flu-
ids.

50. The second Cause of the Diversity of humane Constitutions arises from the Fluids, and this is from the Prevalency of their different Principles, or their Disposition to run into various Combinations or Cohesions.

Principles of
the Blood.

51. The Blood consists of Phlegm or Water, Salt, Sulphur or Oil, and Earth: The Quantity of the first is naturally the greatest; the second next to it; the third is of a less Quantity than either of the other two; and the last is least of all. Which of these four Principles soever happens to be the superior, it is justly reckoned the Predominant, be its Quantity what it will; so that the Temper of the Blood consists in a due Proportion of the Quantity and Quality of those Principles. For if the Oil of the Blood absorb its saline and earthy Part, and its Proportion is more plentiful than its Salt: On the contrary, when the Salts discover themselves in the small Vessels, either by Taste or other Effects, they are the predominant Principles. If the Phlegm so dissolve the Salts and Earth, that they cease to act their just Part, it is the most powerful Principle. If Earth exceeds its Quantity, it thickens the Blood, and is Master.

Causes of its
too great Fluidity.

52. Too great a Fluidity of the Blood is occasioned, 1. When its Particles are smaller than they ought to be. 2. When they have not a due Tendency to cohere with one another.

53. The Smallness of its Particles, and too great Fluidity proceed from its Mixture of Things more capable of Separation than the Particles of the Blood; such are all volatile Salts and Spirits distilled, Cordial Waters, and strong Cordials, as Saffron, Cochineal, *Contrayerva* Root, &c. or mineral Salts, and all mercurial Preparations.

54. This Fusion of the Blood first happens in the larger Vessels, and is communicated by them to the smaller, lateral, and secretory Ducts, from which it exhales so copiously, that Weakness and Faintness must ensue, through the Incapacity of the Vessels to retain such minute Particles, from plentifully and powerfully escaping, either through the Interstices of their Fibres, or excretory Ducts. *Corol. 1.* Hence we know
what

what to think of the hot Regimen in ardent Fevers, where the Skin is dry and parched, the Tongue and Mouth black, the Pulse very quick, and how near it approaches to Manslaughter. 2. Here we learn the Effects of immoderate Tea-Drinking, especially with Tincture of Saffron, or Drams after it.

55. The Blood's slow Motion is either, 1. Because its Particles are too large to pass the smallest Vessels; or, 2. From its Principles being so entangled together, as not to be readily dissolved: Both those fill, straiten, or shut up the Vessels. If this slow Motion happens first in the large Vessels, it causes Polypus's in the Heart, and those Vessels. If it fall out in the small Tubes, it produces Stagnations, which either are cured with Difficulty, or end in Inflammations, Abscesses, Gangrenes, Schirrus, Cancer, or Mortification, according to the Nature of the pent up Humour; and in the lymphatick Vessels it is followed with sily Obstructions of a white Phlegm; or if it happen in the smaller Lymphaticks, Dropsies of all sorts ensue, which, if they continue long and greatly encrease, will excoriate and discharge an ichorous Matter, so as to emaciate and kill the Body. We seldom meet with a Viscidity in the nervous Juice, for that is contrary to the Delicacy of the Tubes which strain it off, and also to the Subtility of the Liquor it self, and the Rapidity of its Motion. Yet it is not wholly excused from this Consistence, as we see from the Loss of both Sense and Motion of the Parts.

Causes of its too slow Motion.

56. An increased Circulation of the Blood is owing to the oftner and stronger Contraction of the Heart and Vessels; and this comes either, 1. From the Brain and *Cerebellum* being too strongly press'd, and thereby made to send forth the nervous Juice in too great Quantity, or too forcibly, as we see it happens in Pains or Passions of the Mind. 2. When the Heart it self is irritated by the Acrimony of the Blood.

Causes of it increased Circulation.

57. The Causes of a great Quantity of Blood in the Body are, 1. Feeding freely on such Things as afford much Chyle and good Blood; or, 2. Living on such Things as are tenacious, and breed much Blood; but its Attenuation, Mixture and Evacuation is slow, because it is difficult to be digested. 3. A great natural Strength in the Bowels and Vessels of this Chylification, and in the Heart and Arteries, but a Weakness in the Veins and other small Vessels.

Causes of a Plethora.

58. When the Blood is too fluid, copious Evacuations of all sorts, large Stools, much Urine, Spittle, and Perspiration ensue, the Body turns lean, weak, thirsty, and inclin'd to Motion.

Effects of a too great Fluidity.

59. The Blood of such as have strong Fibres and Vessels is thick, yet soft and kind; such People use Exercise, which strengthens the Fibres, by attenuating, mixing, and propelling the Blood; so as it is fitted to

Effects of much Exercise.

pass all the Strainers of the Body, especially those of the Brain, whereby much animal Juice is separated, which serves both for Action and Nutrition; the thicken'd Humours are dissolv'd, the Sluices of Evacuation are set open in a healthy Manner, and such Labour or Exercise is so far from dissipating the Spirits, or weakening the Body, that the first is encreased, and the last invigorated. But for the same Reason any Excess in these will stiffen the Fibres, shut up the small Vessels, dry the Body, and bring it sooner to its End; so that although much Labour or Exercise be conducive to Health, yet is it not to long Life.

State of weak
Peoples
Blood.

60. On the contrary, the Blood of weak and tender People is light, thin, broken and sharp, from the Incapacity of the Solids, to put and preserve the Blood in a right Motion for Attenuation and Mixture.

Causes and
Effects of its
Viscosity, ac-
cording to
Boerhave, and
the late Me-
chanicks.

61. A Viscidity of our Humours begets Want of Appetite, Indigestion, a stuffing at the Stomach, Loathing of the Food, Vomiting, the Bile is sluggish and slimy, the Stomach and Intestines are furr'd up with rosy, tough Phlegm, the Belly is costive, the Chyle is sent crude and unprepared into the Lacteals, which causes a tough pale Blood, incapable of Circulation; hence Obstructions and Concretions in the Vessels, the Urine pale and almost insipid, several white Swellings appear, all the Secretions are marr'd, the smallest Vessels shut up and grow together. This gelatinous State of the Blood arises from a too free Use of crude and mealy Aliments, and unripe rough Fruits, or from a Deficiency of good Blood in the Body, or a Laxness and Weakness of the Bowels and Vessels, and a Defect or Thinness of the Bile; and a Diminution of animal Motion, or an immoderate Evacuation of the more watry Parts of the Blood through the weak and lax Strainers, and thereby follows a Retention of the thicker Parts of the Blood and Humours; hence Obstructions and white Tumours.

Causes and
Effects of an
acid Acri-
mony.

62. The Acrimony of the Blood is of four Sorts, *viz.* Acid, alkalious, oily, and muriatick. An acid Acrimony is manifest from an acid Smell and Taste, sour Belchings, Hunger, gnawing Pain of the Stomach, Cholicks, Flatulency, and Convulsions in the Intestines, Inactivity of the Bile; the Chyle and Excrements smell sour, and the *Serum* of the Blood has the same Taste; the whole Body looks pale, and is perplexed with Obstructions, Itchings, Erosions, Eruptions, Ulcers, Coagulations of the Blood, Twitchings of the Brain and Nerves; hence Convulsions, and a Stop put to the Circulation. This Humour is occasioned from much mealy Aliment, acid Juices, either new, crude, or in the Ferment, or already fermented; or by a want of good Blood in the Body fed with that Food, or lastly from a weak and lax Structure of the Fibres and Vessels.

63. An alkalious Acrimony discovers it self by Thirst, Loss of Appetite, stinking Belchings, a fetid, cadaverous Scent; the Mouth, Tongue, Palate and Throat taste of putrified Urine; there is a Loathing and Vomiting of putrid bilious Matter; the Belly is loose, and discharges much Choler, the Stools are shining, black or dark coloured, and of a most intolerable Stench; there are Iliack Pains, and great Heat in the Belly; an inextinguishable Thirst; black, livid, or brown coloured Eruptions break out, and spread on the Body; Urine is fetid, sharp, thick, brown and frothy, with little or no Sediment; there is little Sweat, and that is also fetid; the Skin is dry, the Blood is thin, florid and dissolved, scarce coagulates; it is oleous and volatile, unfit for Nutrition, but consumes and destroys the small Vessels, disturbs and destroys the Function of both Solids and Fluids; Circulation, Secretions and Evacuations are no longer regular; burning Fevers with fetid Discharges ensue; Gangrenes, Buboës, and Purple Spots, sudden Inflammations, Mortifications and Blisters bring up the Rear. This Acrimony is caused by a too free Use of such aromattick Plants as have a sharp Taste; for those being putrefied, melt into a stinking fat Alkali; or by living upon animal Food, fed by Animals of another kind, such are all amphibious Creatures, Birds, Fishes, Beasts and Reptiles; or by a Plenty of such Blood as already tends to Corruption. A great Strength of the Bowels and Vessels, and much Bile, contribute to the same.

Causes and Effects of an alkalious Acrimony.

64. We know the Prevalency of a muriatick Acrimony from a Salt Taste in the Mouth, an Itching and Redness on the Skin, great Thirst, Roughness and Dryness of the Body, Urine full of Salt, with much Sediment, and a fat Scum; it will scarce putrify or stink: This proceeds from an immoderate Use of Sea Salt, pickled Meat, and Meat dry'd in the Smoak, or of Salt, of the Nature of Sea Salt.

Causes and Effects of a muriatick Acrimony.

65. We are satisfied that an oily Acrimony prevails in the Blood, when there is a Taste in the Mouth like that of burnt or putrefied Oil, bitter, rancid and sharp, and a great Heat in the Jaws, and a Belching which smells like rotten Eggs; the Stomach loaths its Food; Stools are white, fat, stinking, and very hot in the *Anus*; the Urine is scanty, frothy, fetid, and flame coloured, the Mouth and Skin are dry, and the last is often set with a fetid Scurf, the Blood is dried up with Heat, the Body is often attacked with acute, sudden, and stubborn Inflammations and Suppurations, and often most fetid Gangrenes. This Acrimony owes its Birth to a too plentiful Indulgence of fat Meat, Butter, Oil, and oleaginous Fare, and very fat gravy, &c.

Causes and Effects of an oily Acrimony.

How all these
are cured.

66. A predominant Acidity of the Juices is cured by Diluters, Absorbents, Strengtheners, Exercise, and whatever begets good conditioned Blood. An alkalious Acrimony requires Acids, Diluters, Absorbents, soapy detergent Medicines and Rest. A Viscidity of the Juices indicates the Use of Things well fermented and salt, Corroboraters, Diluters, Resolvers, Stimulators, Exercise, soapy Medicines, with Friction and Blistering. An oily Acrimony calls for Acids, Coolers, Diluters, and soapy Things. A Blood too Fluid, should have the Motion of its Solids increased: Terrestrious Things, Thickeners, and Astringents are needful here. A muriatick Acrimony must have an insipid, watry Diet, without Salt, but a little acidulated and diluting, and lixivious Medicines. A viscid Blood is attenuated by Diluters, gentle Evacuations, Chalybeats and Bitters (if there be neither a *Plethora*, nor Inflammations to forbid them, and in that Case black Hellebore comes in the Room of Steel) and good Exercise. If too thick Blood, it is thinned by Diluters, gentle Catharticks, and such Things as dispose its Parts to a brisker Motion, Rest, thin and somewhat stimulating Diet, &c.

Thus, MADAM, I have attempted both the Solution of your Ladyship's Question, and at the same Time to give the best Account I am capable of the many Causes of the Variety of humane Constitutions both as to Solids and Fluids, whether they be natural or adventitious; which if agreeable to your Ladyship, and useful to the World, I have my End, and my Labour fully compensated.

I am, MADAM,

Your Ladyship's

Most Humble, most Obligated,

and Obedient Servant,

THO. SHORT.

1. **S**I maxime laxæ, vel dilatabiles sint Ovi fœminæ Membranz vel Tunicz; vel si Fluida in ovo contenta, perferosa, mollia & lubrica sint; aut si nimis ejectionibus, præcipue voluntariis, vel Tenuitate vasorum fecernentium, aut Inopia Sanguinis per Arterias spermaticas ad Testiculos delati; aut a Glandularum Testicularium Laxitate, Obstructionibus, Inelasticitate, vel a Veneris Diffusione, vel Abstinencia, Sperma Masculinum pertenuè, paucum, insipidum, minus præparatum, aquosum, &c. est; vel si Glandularum uteri, in Coitionis, Conceptionis, Gestationisve Tempore, adfit nimia Laxatio vel Imbecillitas, serosi Liquoris in Uteri Cavitate copiosa sequetur Evomitio, quæ certo Semen virile, & Liquorem in Ovo contentum, maxime diluet, & Ovi Membranas, Embryonisque Tunicas laxabit; hinc orientur Vitæ laxa Stamina, Fibrisque mollibus & morbosis nascetur Infans indutus.

2. Si e contra Ovi vel Ovarii Tunicz bene & firmiter connexæ sint, salubrisque crassiorisve Consistentiæ eorum succi; sique optime præparatum, album, spissum, partibusque salubribus & terrestribus abundat Semen masculinum, nec Veneris illicitæ Labem continet, sique Salis Tartaris, in Manu cum Aqua calida dissoluti, odorem referat; eodemque Tempore Fœminæ sanguis, serositate nimia, vel tepido, molli, lubrico, insipido, & pinguisfero Liquore non repletur, nec multum feri fecernentes uteri Glandulæ laxæ, nec Gestationis spatio, cibus aut potis aquosis nimis aut laxantibus indulget Mater, concipietur Embryo, & nascetur Infans firmis sanisque solidis.

3. Si partibus sulphureis, mollibus & flexis, aliisque principiis prædominantibus abundat semen virile, sique sanguis Maternus, cæterisque corporis, ovorum, & uteri succi ejusdem speciei sint, Embryo & Infans Fluidis balsamicis, oleosis, & mollibus indutus concipietur.

4. Si cujuscunque speciei, in sanguine & spermate parentis Masculini, sal præ-

dominabit, sique habebunt Matris Fluida eadem salina corpuscula prevalentia; cum a Liquidis parentum Fluida recipiet Embryo, in ejus succis primis eadem prævalerunt, quæ in parentum Fluidis, Generationis, & Gravitationis Tempore superaverant.

5. Si a maxime serosis Fluidis primaria Liquida recipiet puer, perferosus & pertenuis erit ejus sanguis; impossibile enim est, parentes Liberis succos salubriores communicare quam in Corporibus suis Generationis Tempore existebant. Hinc Cholericum Cholericus, Phlegmaticum Phlegmaticus, &c. gignet; qui tamen Nonnaturalium proprio & obstinato usu in Constitutiones alias mutantur.

6. Si aliqua vasa, vel Glandulæ angustiores, vel laxiores in quavis Corporis parte habet Pater, i. e. Si obstructionibus, stagnationibus, stimulationibus, coagulationibusve, in Cerebri Glandulis; pedum Nervis, totius Corporisve Lymphaticis obnoxius est Parens Masculus; a vasorum illorum Laxitate, Dilatabilitate, Tenuitate, vel Diametrorum Longitudine, vel Brevitate, vel a Fluidorum, per vasa illa facile circulare ineptitudine, vel a variis Attractionibus, Cohæsionibus, vel Liquidorum Combinationibus. Cum Sperma a Fluidis illis fecerni oportet, Attractionibus ejusdem Generis obnoxium erit, staminaque talia constituet, sive in Nervis, aut Glandulis, vel Lymphaticis. Hinc Apoplecticis Apoplecticum, Paralyticis Paralyticum, Asthmaticis Asthmaticum, Strumaticis Strumaticum, Phthysicis Phthysicum, Podagricis Podagricum gignet.

This Chain of Reasoning will readily help us to account for several Things of this kind, which seem very difficult; as how Diseases become hereditary? Why Parents may at some Times beget Children of Constitutions quite different from their own, &c. which the Ingenious will easily discover, but the Stupid never can.

*The Reader is desired to correct the following Errata occasioned by the
Author's Absence from the Press.*

PAGE 2. Line penult. *for Sex, read Sexes.* p. 3. l. 24. *for crumbled r. crumpled.* p. 3, and 4. *for Trigantius r. Trigautius.* p. 4, 5, 11, 12. *for Kempfer r. Kempfer.* p. 5. l. 3. *for Discourse, r. Description of the Plant and its Leaf.* p. 11. l. 14. *of the Notes for Mauvi r. Mauri, or Maurigafinia.* p. 12. l. 11. *for Sbrub r. Shrub.* p. 15. l. 5, and 34. *r. Copperas.* p. 22. l. 14. *for heighth r. height.* p. 28. Notes Col. 2. l. 35. *r. Colour precipitated much,* p. 34. l. 3. *r. dissolvable.* p. 39. Notes Col. 2. l. 13. *r. expressing.* p. 40. Col. 1. l. 5. *r. irritating.* p. 73. l. 14. *r. Ægineta.* p. 81. l. 15. *for the r. tho'.* p. 93. l. 37. *for Grafs r. Grape.* p. 96. l. 14. *r. Molocco's.* p. 102. l. 32. *for Cast r. Case.* p. 105. l. 2. *r. Ossification.* p. 110. l. 12. *for Biles r. Bile.* p. 112. lin. penult. *for will r. which.*

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